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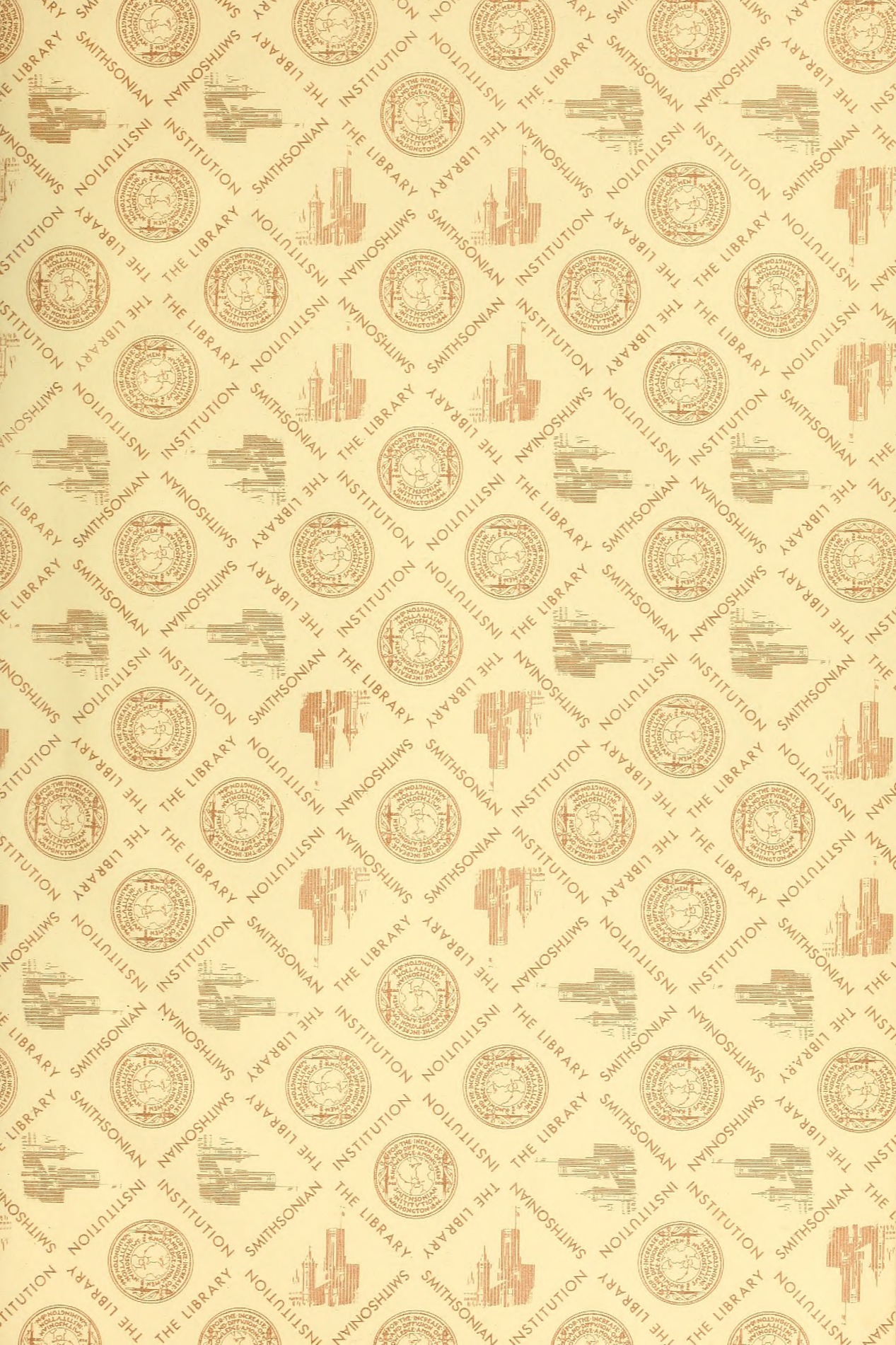
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Photograph by E. V. Vitarelli, Pittsburgh

Frontispiece. Undersides of males of seven species of *Najas* found in Liberia. A, *N. xypete* (Hewitson), Harbel. B, *N. crockeri* (Butler), Ganta. C, *N. gausape* (Butler), Harbel. D, *N. cyparissa* (Cramer), Sierra Leone (Holland collection). E, *N. sarcoptera* (Butler), Sierra Leone (Holland collection). F and G, *N. themis themis* Hubner, Ganta. H, *N. janetta* (Butler), Ganta. (Five-seventh natural size.)

MEMOIRS
OF THE
AMERICAN ENTOMOLOGICAL SOCIETY
NUMBER 19

THE BUTTERFLIES OF LIBERIA

BY

RICHARD M. FOX, ARTHUR W. LINDSEY, JR.

HARRY K. CLENCH

AND

LEE D. MILLER

PUBLISHED BY THE AMERICAN ENTOMOLOGICAL SOCIETY
AT THE ACADEMY OF NATURAL SCIENCES
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1965

HAROLD J. GRANT, JR.
EDITOR

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This work is dedicated to the late Doctor Arthur W. Lindsey, Jr., whose death in 1963 made his collaboration in the present study the last of his distinguished contributions to knowledge.

Preface

During the nearly five years I lived in Liberia I spent much of my spare time collecting insects and sent more than six thousand butterflies home to Carnegie Museum, already the repository for the finest representation of African Lepidoptera in the Americas. In 1960 National Science Foundation awarded me a grant (G-14048) for research on the Liberian butterfly fauna, in which pursuit I enlisted the collaboration of Harry K. Clench to study the lycaenids and of Dr. Arthur W. Lindsey and Lee D. Miller (it was Miller who completed the work on the family) to study the hesperids.

Various shorter ancillary papers have resulted from our research and have been published by Clench, Miller and me: all have dealt with taxa needing revision or with the fauna of parts of Africa other than Liberia. From the outset we planned to reserve our observations on the Liberian butterflies to a single comprehensive volume. Publication of a work such as we envisioned, because of its size and nature, would not have been possible without financial assistance. Again National Science Foundation provided support and awarded me a publication grant (GN-229). My collaborators and I gratefully acknowledge the vital support to the present volume, and to the research behind it, afforded by these two grants from National Science Foundation.

Collaboration has the same difficulties and drawbacks inherent in committee work; it has not always been easy for the collaborators on this volume to reach agreement in matters of style, terminology and the like. I am grateful to my colleagues for their fine contributions and for their cooperation. I am also grateful to Jean Walker Fox for her labors in collating the bibliography — by no means an easy task with so many authors — and to Richard T. Satterwhite for his drawings in the introduction.

Finally, we are indebted to the American Entomological Society for accepting our studies for inclusion in its Memoirs series and we are especially grateful for the competent assistance of the Editor, Dr. Harold J. Grant, Jr., Chairman of the Department of Insects, Academy of Natural Sciences of Philadelphia.

Richard M. Fox

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THE BUTTERFLIES OF LIBERIA

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INTRODUCTION

BY RICHARD M. FOX

Liberia is situated on the West Coast of Africa between 2°22′ and 8°31′ north of the equator, 7°30′ and 11°30′ west of Greenwich, directly south of Portugal and Ireland but, with 43,000 square miles, is larger than either. The Liberian coastline on the Atlantic is 350 miles long and runs northwest-southeast. The country is bound on the northwest by Sierra Leone, to the southeast by Republic of Ivory Coast and to the interior by Republic of Guinea (maps 1, 2).

Between the Mano River (the boundary with Sierra Leone) and the Cavalla River (the boundary with Ivory Coast) four large rivers tra-

[1] National Science Foundation made this publication possible through Research Grant G-14048 and Publication Grant GN-229.

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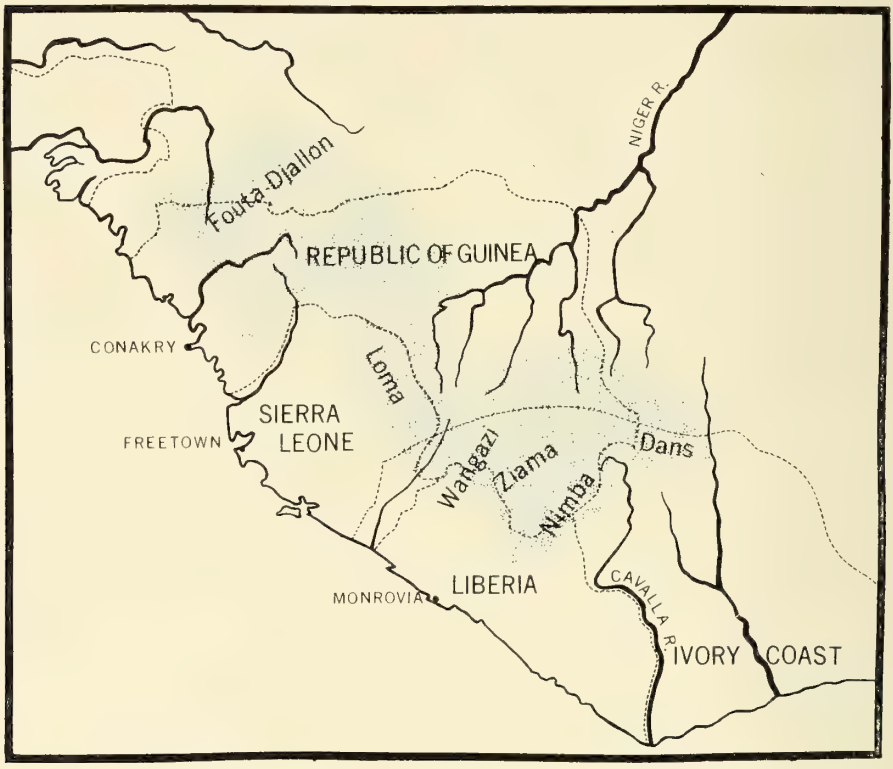
verse Liberia in a direction perpendicular to the coastline. From west to east these are the Lofa, the St. Paul, the St. John and the Cestos. They arise in the mountains at or beyond the northeastern frontier in Guinea. On these and on the many smaller creek and river systems tidal influence reaches 20 to 30 miles inland, above which there are alternately steep, rocky rapids and reaches of deep, apparently placid water.



Map 1. The mountain ranges in Occidental Africa. (Based on Schnell, 1952: fig. 1).

The land rises toward the interior by a succession of deeply eroded terraces which must once have been escarpments. Between these steps the land is plateau-like, studded with abrupt hills separated from one another and irregularly arranged. Toward the interior the hills increase in frequency, bulk and height and the country becomes quite rugged. The northeastern frontier lies on or near the apex of the series of terraces. Here the plateau is 2500 to 3000 feet above sea

level and is broken by a confused jumble of ridges and crests at the headwaters of the major rivers. Mt. Nimba, a massif lying partly in Liberia and partly in Guinea, has been estimated through the years at a wide range of heights. Its discoverer said it was 6560 feet above sea level (Johnston, 1906), while Cole (1956) states that it is 4200 feet. It remained for scientists from the Institut Français d'Afrique Noire to record accurate measurements: Mt. Richard-Molard, the highest crest in the range was found to be 1752 meters (5748 feet) above sea level (Le Clerc and others, 1955).

The Nimba massif is the keystone of a long, almost continuous series of connected ridges and high crests roughly paralleling the coast. This series begins in Ivory Coast and beyond the Nimbas it includes the Wangazi range at the headwaters of the Lofa and Via rivers (the latter a tributary of the St. Paul), the Loma range in Sierra Leone and terminates in the Fouta-Djallon range in Guinea (map 1). It forms the divide between the short, rapid river systems flowing directly into the Atlantic and the watershed of the vast Niger River basin.

This row of mountains has a profound effect upon the climate of the entire region. The trade winds, heavily laden with moisture, blow in from the sea and drop their burden as torrential rains on the relatively narrow coastal side of the mountains, then continue inland bearing relatively little moisture. The mountains cause a rain shadow on the lands to the north and east and thus contribute to the formation of savanna and, eventually, of the Sahara itself.

Climate. — For discussions of weather, rainfall and temperature in Liberia, see Strong (1930), Schwab and Harley (1947), Gelfand (1955) and Fox (1957).

In general, the rainy season begins with spectacular thunderstorms around the first of June, plus or minus three weeks, then settles down to nearly continual cloudiness and rainfall until October. During this period about three-quarters of the annual precipitation occurs. Sometime during the last half of July or during August the rains cease for a period that varies from year to year — it may be as short as three or four days or as long as several weeks — and which is known as the "middle drys". From late October until the thunderstorms of May or June, extends what is called the "dry season". But especially near the coast, the dry season is far from dry; it is merely that time of the year when less rain falls.

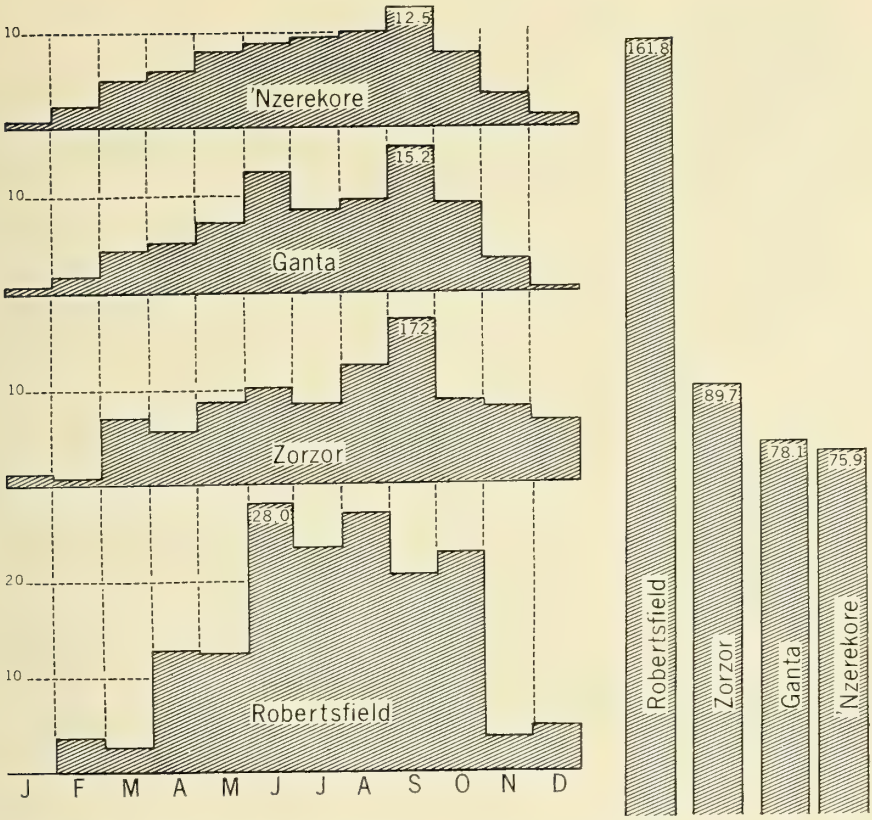
The most complete weather data have been collected at Robertsfield International Airport, a few miles inland in a region of nearly maximum precipitation. For the seven years from May 1949 to April 1956, Robertsfield weather records show an average annual rainfall of 4066.3 millimeters (160.09 inches). Between May 1953 and April 1954 the total precipitation was 5313.7 millimeters (209.2 inches), but between May 1949 and April 1950 the rainfall was only 3300.5 millimeters (129.94 inches) (Fox, 1957).

Temperature at the coast is remarkably uniform. It is unusual to find a daily range greater than 10° Fahrenheit. Thermographic records at the Liberian Institute showed that the mean temperature varied between 70° F and 86° F during a year. Near the coast the coolest time of the year is toward the end of the rainy season, probably the cumulative effect of the almost continual cloud cover. March and early April can be uncomfortably hot in the open.

Relative humidity is almost always higher than 70%. During the rains the air is often supersaturated, resulting in measurements of more than 100%. Only at the height of the "dry" season does the humidity drop as low as 40% for a few hours in the early afternoon. For several years I kept precipitation and temperature records at the Liberian Institute, only three miles toward the coast from Robertsfield, and found that about 10% more rain fell there than at the airport.

Conditions at the coast do not occur throughout Liberia. Average rainfall gradually declines toward the interior. At the Methodist Mission at Ganta, 170 miles inland, records show a 20-year average of 2117.6 millimeters (83.37 inches) (Schwab and Harley, 1947). During 1958, 1959 and 1960 Dr. Frank Keller kept records at the Lutheran Mission at Zorzor and found an average annual rainfall of 2277.6 millimeters (89.67 inches) (personal communication), substantially similar to precipitation occurring at Ganta.

Both humidity and temperatures in the interior are somewhat lower than at the coast and the distribution through the year differs. In late December or early January a dry, cool wind known as the "harmattan" blows steadily from the north for a week or so and sharply reduces temperatures and humidity for a time. Consequently, the coldest time of the year in the interior is not at the end of the rainy season but rather during the "harmattan" in January. The "harmattan" rarely is appreciable at the coast.



Graph 1. Rainfall at three stations in Liberia — Robertsfield, on the coast, Zorzor and Ganta in the interior — and at 'Nzerekore, Republic of Guinea, about 60 miles north of the Liberian frontier near the boundary between the Guinean and Forest Zones. The four figures at left show the monthly distribution of rainfall. The four bars at right show the total annual precipitation. Records for Robertsfield are for the period from June 1955 to May 1956 inclusive (Fox, 1956). Records for Zorzor, averaged for 1958 to 1960 inclusive, are based on data supplied by Dr. Franklin Keller of the Zorzor Lutheran Mission. Records for Ganta are averaged for 1927 to 1930 inclusive (Schwab and Harley, 1947). Records for 'Nzerekore are from Schnell, 1952.

Rainfall records for Robertsfield, Ganta and Zorzor are compared in graph 1. The first station is one of the wettest in Liberia and probably one of the wettest on the entire coast. The other two stations, both well inland, are more typical of the greater part of the rain forest zone. In general, rainfall at almost any place in Liberia is

roughly proportional to its distance from the coast, diminishing toward the interior.

Liberian Biotopes. — The major biotopes in Liberia are, in sequence inland from the sea: the outer strand, the mangrove swamps, the grassy coastal parks and the tropical rain forest. The rain forest is in fact a complex of biotopes, as explained below.

The *outer strand* biotope rests on the sandbars forming the entire coastline and is broken here and there by high rocky promontories. These sandbars, supporting a more or less permanent vegetation and a depauperate fauna, separate the open sea from the numerous, narrow, brakish lagoons.

The *mangrove swamp* lies on the inland banks of the coastal lagoons and on the banks of the streams flowing into them, including all the very considerable adjacent low areas awash at high tide but generally exposed at low. *Rhizophora, Avicennia* and other salt-tolerant forms anchored in the mud make up the vegetation.

Together these two biotopes form an almost continuous belt along the coast, rarely extending inland more than a few miles. While there are many insects characteristic of these communities, neither the outer strand nor the mangrove seems to support a typical butterfly fauna. Only universally distributed species were observed, apparently wandering.

Beyond the mangrove swamps is a belt of sand one to four miles wide and paralleling the coast. Just higher than tidal level, this land has a water table very close to the surface in the dry season and it is soggy or inundated during the rains. Only tussock-forming grasses are supported, except along the banks of the numerous tiny streams where a thin deposit of alluvial silt enables the oil palm and thick, bushy undergrowth to develop as narrow, corridor-like thickets. This biotope has been called "coastal savanna" by Briscoe (1952) and others, but might more properly and less confusingly be known as *grassy coastal park*.

I repeatedly investigated these parks for insects, but found that neither the grassy areas nor the corridor thickets yielded at any season of the year any butterfly not also present in agricultural lands, and then never in numbers.

The *tropical rain forest,* with its variations, covers the rest of Liberia (figs. 1-9), forming a part of the vast forest belt that extends

Fig. 1. General view of upper Farmington River some miles north of Harbel, showing down-sweep of canopy at river banks and vegetation-covered islands. (Photographed by Jean W. Fox).

along the West Coast and across the Congo Basin. This forest is rich both in number of species of butterflies and, at times, in numbers of a particular species.

The rain forest is not, however, geographically continuous. Map 2 and the vegetation map of Schantz and Marbut (1923) clearly illustrates its discontinuity. One notes that the Congo Basin forest extends around the coast of the Gulf of Guinea almost to Lagos in Nigeria. In western Nigeria, Togo, and Dahomey, there is a series of disconnected islands of rain forest surrounded by savanna; a large insular area of rain forest lies near the coast in eastern Ghana and extends inland along the Volta River. Western Ghana, Ivory Coast, Liberia, and eastern Sierra Leone are largely covered by a single forest which extends northward along the major river valleys into the

Guinean Zone and recurs as isolated corridor and hilltop forests. Near the middle of Ivory Coast, a wedge of savanna nearly reaches the sea and almost bisects the forest. West of the main forest in Sierra Leone there are a few major islands of forest along the Casamance River in Portuguese Guinea and on the middle reaches of the Gambia River, everywhere enclosed by savanna. The possibilities for specific and subspecific endemism in these discontinuous forests are at once evident.

The Liberian forest extends over the mountains into the southern part of upper Guinea. As the high country gives way to plains and the effect of the rain shadow begins to be felt, the forest ends rather abruptly and is replaced by Guinean Zone savanna. In this region I observed that the plains are interrupted by isolated hills, often steep and high. Rain forest is supported on their tops and weather sides, as small, isolated units. Corridor forests occur along the stream banks as extensions of the main forest to the south. The savanna is covered with high grass and has a varied population of well-spaced trees and shrubs.

Within Liberia, the primary concern of the present study, the rain forest consists of a complex of biotopes.

(1) Virgin primitive forest, subdivided into:
   (a) the canopy,
   (b) the floor,
   (c) clearings,
   (d) stream banks and islands,
   (e) parks and prairies.

(2) Disturbed forest, subdivided into:
   (a) lands planted to field crops such as rice or cassava,
   (b) lands planted to tree crops such as rubber, cocoa, coffee or cola,
   (c) fallow agricultural land grown into young (less than six years) secondary bush,
   (d) former agricultural land grown into old (more than six years) secondary bush or forest.

The *canopy,* from 60 to more than 150 feet above ground level, is a world of its own and is the primary haunt of many forest butterflies.

Fig. 2. Edge-wall of primary forest beside the motor road where it ascends Gibi Ridge, about 60 miles north of Monrovia. (Photographed by Jean W. Fox).

Papilio antimachus, for example, is poorly represented in entomological collections, not because the species is rare in nature, but because it keeps to the canopy. I suspect that many of the forest species regarded as "rare" are, in fact, typical canopy elements and merely difficult to net.

Not every species haunting the canopy is to be found nowhere else. Some descend to ground level in clearings and along streams (figs. 1-3); many are attracted to mud puddles on roads cutting through the forest. I noticed that many hesperids and lycaenids, not observed during most of the day, could be found flitting about or resting on the leafy western edge of a forest or woods where the last rays of the setting sun could reach them.

The *forest floor* is in twilight and devoid of green growth in proportion to the density of the canopy. In primitive forest the view in every

direction is of the huge grey and silver tree trunks reaching upward like cathedral columns to the roof. The only butterflies to be found in such a situation are a few species of the Liminitini — *Cymothoe, Najas* and the like — and these only sparsely.

Over tribal trails, roads, and sometimes on steep slopes, the canopy is thinner, allowing grass and shrubs to grow on the floor. Here are found many species of lycaenids, the riodinids, some hesperids and many of the nymphalids. *Najas* and related genera are typical. These places appear to attract the butterflies that everywhere else on the floor are to be seen only as elusive, ghostlike flashes. As one walks along a trail the butterflies rise up ahead and re-alight some feet farther on, repeating the process as one nears them again. During a good day in January or February, when these species are at their height, I sometimes had the sensation of constantly approaching but never quite reaching an inverted waterfall of butterflies.

A *clearing* is formed when a large tree at last topples. In a few years the adjacent trees close the gap and reform the continuous canopy, but until that happens the shrubs, trees and vines in and around the clearing thrust branches and leaves into it and form green walls. A clearing is a well in the canopy and many of the canopy species explore downward along its walls, often coming within reach of the net.

At streams the canopy is permanently broken and the leafy ceiling curves down and becomes a leafy wall. This downsweep of the canopy contour (figs. 1-3) leads many species to the ground as in clearings. Certain canopy lycaenids, hesperids and especially *Papilio* may be found on stream banks or on the low vegetation-covered islands in rivers. Flat rocks bathed in spray from a rapids seem to be attractive to *Papilio* never found elsewhere near the ground.

Forest parks occur in the mountainous areas near the frontier with Guinea, particularly where the soil overlying bedrock is too thin to support trees but thick enough for grasses. Similar park-like *prairies* occur along the very crests of some of the mountains along the divide, particularly in the Nimbas. These parks and prairies are mostly of limited area and are not true savanna (Schnell, 1952), though they have been so-called. However, some of the savanna hesperids and lycaenids have been found in them.

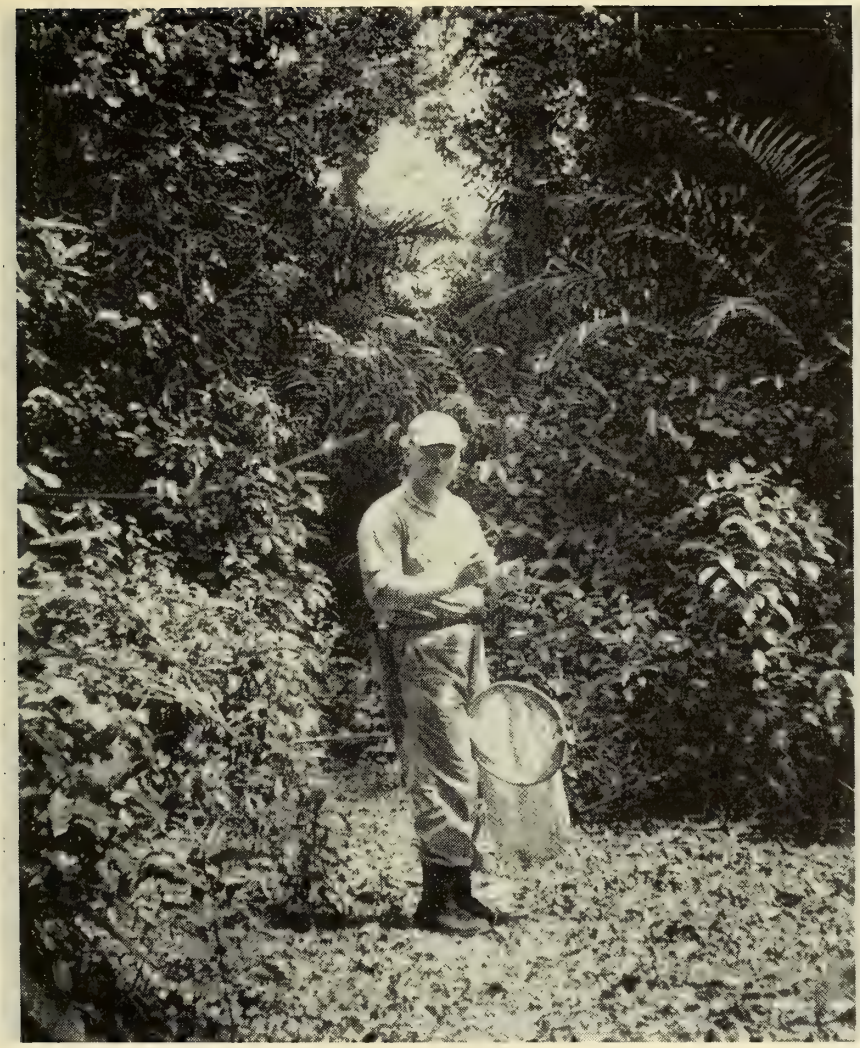


Fig. 3. R. M. Fox standing before edge-wall of primary forest at Fish Lake, viewed from the lake. (Photographed by Jean W. Fox).

Tribal methods of agriculture involve cutting and burning the virgin forests (figs. 8, 9) and using a given field only every seven years. Because a field lies fallow for six years, growing to what it will, each community must cut seven times as much virgin forest as is required for crops in one year. Accordingly, near villages and towns there are substantial areas of disturbed forest (figs. 5-9) — a term I here use

to include fields actually in use as well as the various stages of secondary bush forming during the fallow years. By the sixth year secondary bush is fifteen to thirty feet high (fig. 7), the canopy poorly formed, and the floor a tangle of shrubs and grasses. Sometimes an agricultural area is not used when its turn in the rotation comes (figs. 6, 7), and the secondary bush gradually evolves toward a climax which eventually duplicates the virgin forest.

During the past thirty years rubber has become an increasingly popular and profitable crop in Liberia. The current development of a system of motor roads has led to extensive cutting of the virgin forest along these roads and the planting of the Brazilian rubber tree, *Hevea*. Because *Hevea* is more productive when grown on well-drained soil, the swampy low-lying areas are not included in the rubber groves but are allowed to grow to endemic flora. A rubber plantation is not, therefore, a completely homogeneous biotope. The *Hevea* groves themselves are devoid of butterflies, except those in transit, but the unplanted swampy ground, constituting from a fourth to a third of a plantation, has a butterfly population similar to that found in secondary bush.

Cocoa and coffee, traditional tree crops in Liberia, are both widely planted along the coast and in several regions of the interior. Many tribal villages devote a part of their agricultural lands to these crops. Both require a protective cover from the direct sun and such plantations always include some trees that grow much taller than the crop bushes. Frequently this cover consists merely of rain forest species allowed to remain standing at the time of initial cutting. The butterfly fauna of cocoa and coffee plantations resembles that of the basic forest.

Map 3, based on the aerial survey map of Liberia (U.S.C.G.S., 1957), shows the extent of surviving primitive forest. Most of the coastal 10 or 20 miles of the forest have been cut, as has been that part of the forest bordering the lower reaches of rivers — until recently the principal routes of communication. The motor road transecting Liberia from Monrovia, the chief port of access for Liberia as well as for upper Guinea, to Ganta and connecting with the road system in Guinea has been functional since soon after World War II and a belt of agricultural land from 5 to 30 miles wide, extending from the sea to the Guinea frontier, has been developed along it. With the

Fig. 4. Jean W. Fox collecting in palm thicket and swamp at the margin of Fish Lake.

construction of the major connecting roads to Voijama and Kalahoun to the north and to Tapita and Chiehn to the east, the forest has been or is being cut accordingly.

However, roughly two-thirds of Liberia is still virgin tropical rain forest. There are two extensive, sparsely inhabited forests. In the Western Province the Gola Forest extends from near the coast and the vicinity of Bomi Hills northeastward to Voinjama, a region of about 150 miles by 75 miles, within which there are few villages. In the Eastern Province, the forest extends from the valley of the St. John River to the Cavalla River, from the sea to the frontier, an area about 100 miles by 175 miles dotted here and there with very limited areas of tribal agriculture. In either of these forests it is quite possible to walk for a week or more without meeting a person or finding a village. Both forests continue beyond the frontier of the high plateau which is completely covered with virgin forest. Thus, even the extensive cor-

ridor of agricultural lands in the Central Province does not reach the savanna and does not completely transect the primitive forest.

The floristic components of the Occidental African forest have been detailed and discussed in many botanical works. Basic general references of value are Engler and Drude (1910), Schantz and Marbut (1923), Hutchinson and Dalziel (1927), Aubreville (1936), Richards (1939), and Schnell (1952). Studies with special reference to Liberia include Stapf (1905), Cooper and Record (1931), Dinklage (1937), and Warner (1945). Briscoe (1952) presented a concise summary of the fauna and flora of Liberia which is useful as a checklist and contains a copious bibliography.

Biogeography. — Sclater (1858) and Wallace (1876) classified the land masses and islands of the world into six major zoogeographic regions, based primarily upon the distributions of birds and mammals. The Ethiopian Region comprised the southern part of the Arabian peninsula, Africa south of the Sahara, and the islands lying offshore in the Indian Ocean. Wallace further divided the Ethiopian Region into four subregions, one of which he called "West Africa." This subregion, according to Wallace, was bounded by a line running east from the Gambia River to a point beyond Lake Chad, thence south across the Congo basin into northern Angola, thence west to the sea. However, as additional information became available it was found necessary to revise the biogeographic boundaries of West Africa. One of the more influential studies was that of Chapin (1932), who used bird distribution to demonstrate a broad homogeneity throughout the Congo basin east to Lakes Albert, Edward, and Victoria. Chapin, following earlier studies, divided the West African Subregion into two parts; the area west of an ecologic break near the Niger River he called Upper Guinea, the area to the east and south, Lower Guinea. This nomenclature is in general use in most English language works. Bray (1964), however, defines West Africa in substantially the same terms as I define Occidental Africa.

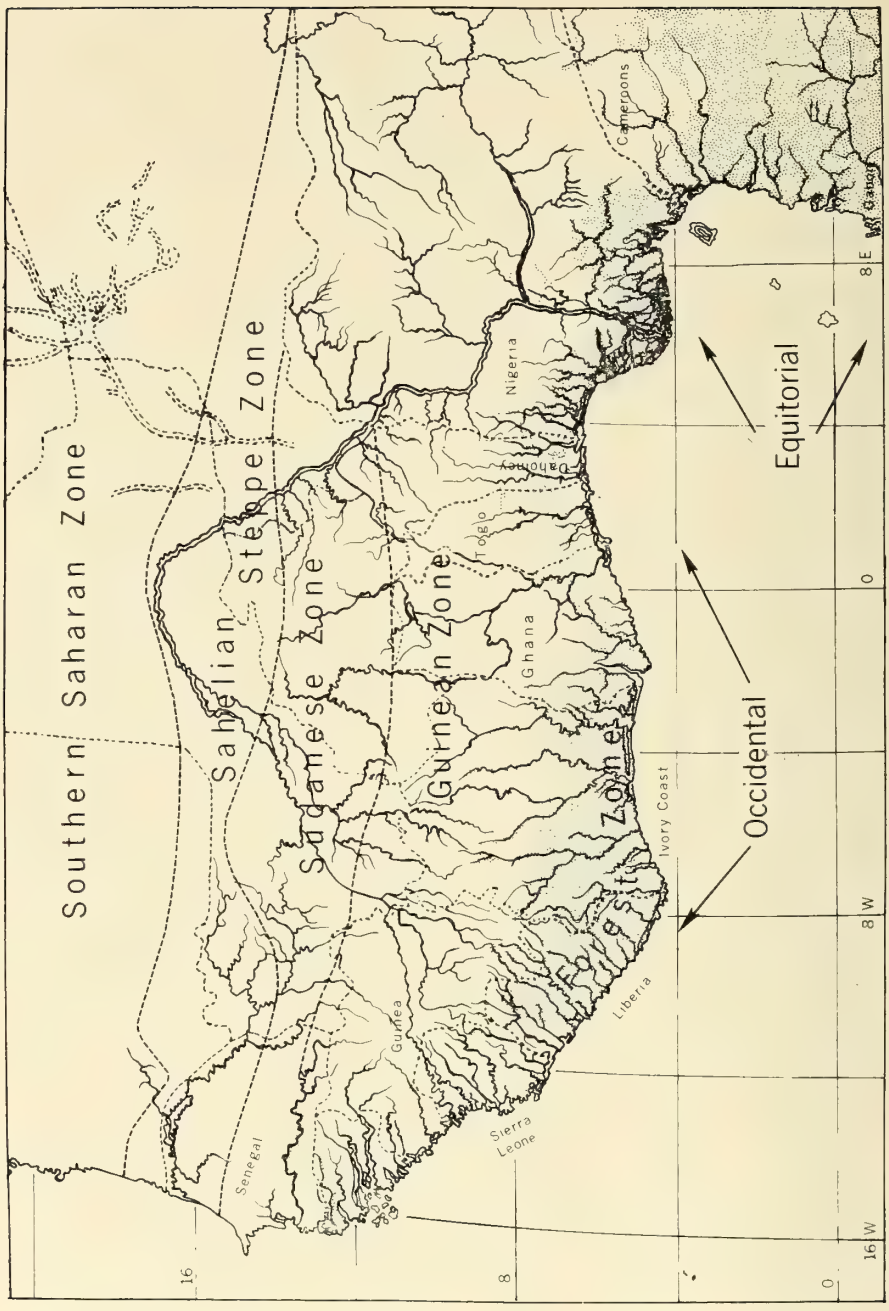
Meanwhile, French scientists carried out extensive, detailed zoologic and botanic studies in the considerable and varied areas that formerly were French Colonial Africa. While the various biogeographic divisions, as developed from these studies, are much like those used by Chapin (1932: 90, map), they are much more accurately de-

fined biogeographically, since the work has not been based upon only a single animal group. However, in the French literature a terminology has developed which is quite different from English usage and even is in direct conflict with it. "West Africa" (*Afrique occidentale*) is used to designate all the area south of the western Sahara as far east as a line drawn slightly east of north from the ecologic discontinuity in Nigeria (map 2) and includes the Upper Guinea of English usage plus the savanna and semidesert north of it. To the west and south of the Nigerian discontinuity the area corresponding to Lower Guinea of English usage is called the "Congolese Forest" and the whole complex of ecologies comprised by the eastern part of West Africa of English usage is called "Central Africa" or "Equatorial Africa". Furthermore, in French usage "Upper Guinea" refers specifically and only to the interior of the Republic of Guinea north of Liberia, while "Lower Guinea" refers only to the southwestern half of that Republic.

I have always regarded the inclusion of the Congo in "West Africa" as a semantic contradiction, possibly founded on the viewpoint that Africa is divided into East Africa and the rest. However, terms are not of themselves of any importance; it is important only to use terms consistently and in a way understood by everyone. We hope that the present study will be used by both English- and French-speaking scientists, but we anticipate possible confusion should we adopt either the French terminology (which I prefer) or the English terminology (which my colleagues prefer); a scientist of either language group will assume he knows what we mean by "West Africa" or "Upper Guinea" when he reads it, but his assumption will not necessarily be correct.

Accordingly, we have decided to avoid either set of terms. In this paper we refer to the Guinean Subregion (West Africa of English usage) divided into Occidental Africa and Equitorial West Africa (figure 4). It should be emphasized that we are attempting to avoid confusion, not to introduce a third terminology, and that we regard these designations as being entirely informal and unofficial.

Chevalier (1911, 1933) proposed a series of phytogeographic "zones" or "domains" (figure 2) as subdivisions of the Guinean Subregion. Schnell (1952) defined these zones from north to south as follows: (1) The Mid-Saharan Zone, with an annual rainfall of less than one inch, characterized by almost no vegetation except at oases;


Southern Saharan Zone
Sahelian Steppe Zone
Sudanese Zone
Guinean Zone
Forest Zone
Occidental
Equitorial
Senegal
Guinea
Sierra Leone
Liberia
Ivory Coast
Ghana
Togo
Nigeria
Cameroons
Gabon
16
8
0
16 W
8 W
0
8 E

(2) Southern Sahara Zone, with annual rainfall between four and 10 inches, characterized by depauperate, low vegetation associated with the occasional rainfall; (3) Sahelian Steppe Zone, with rainfall from 10 to 20 inches and characterized by thorn scrub and discontinuous ground cover; (4) Sudanese Zone, with rainfall between 20 and 60 inches, characterized by tall savanna grasses and isolated shrubs and trees; (5) Guinean Zone, with rainfall from 60 to 70 inches annually, or even as much as 157 inches (at Conakry), and a marked dry season from November to April, vegetation characteristically savanna crossed by gallery forests and with islands of forest on hilltops or weather slopes — this zone is regarded as having been tropical forest in the recent past; (6) Tropical Forest Zone, with rainfall higher than 53 inches annually and a brief dry season or none, characterized by high dense rain forest. The flora of these zones differ from one another primarily in quantity, with each successively southern zone having plant species of the northerly zones plus additional species not found to the north.

Collections of Liberian Butterflies. — The present study is primarily based on the collections in Carnegie Museum, undoubtedly containing the finest representation of African butterflies in North America. Liberian butterflies in Carnegie Museum originated from various sources.

Other than the large Fox Collection, the best Liberian representation was the work of George Naysmith, a missionary who lived in the Cape Palmas region from 1889 to 1893. The Naysmith Collection — about 250 specimens and some 96 species — was acquired by George Ehrmann who later bequeathed it to Carnegie Museum. Unfortunately Ehrmann seems to have been unconcerned with label data and many Naysmith specimens lack date, locality or both. Undoubtedly all came from southeastern Liberia near Cape Palmas. The collection includes a number of species unrecorded for Liberia until the present publication, but in no case is any species represented by long series.

Rev. A. C. Good and his son, Rev. A. I. Good, missionaries who

Map 2. Occidental Africa and the western part of Equitorial Africa, showing the life zones. Rainforested areas are stippled. (Based on Rougerie, 1960: fig. 23, and Shantz and Marbut, 1923).

Fig. 5. Palm log bridge across Far Creek on the trail to Farwein village, near L.I.T.M., with agricultural lands in the background. Many lycaenids and hesperids were taken at this site.

contributed so much to the magnificent collections of insects from Cameroons and Gabon in Carnegie Museum, apparently visited Liberia briefly on several occasions, probably while the ships, on which

they were passengers *en route* to or from their mission stations, stood off Liberian ports and worked cargo. Some of this material is labelled "Monrovia", some merely "Liberia", some "Cape Palmas". The first two labels probably identify specimens collected by A. C. Good at some time (or times) after 1890; the third label represents the work of A. I. Good in September, 1909. The Good material was part of the Holland Collection when it was presented to Carnegie Museum.

W. D. Thomas, then a radio operator with the bomber ferry command, collected in 1942 at Fisherman's Lake and Robertsfield, both ports of call during World War II. His lycaenids went to H. K. Clench and came to Carnegie Museum with the Clench Collection; his limited amount of other butterflies are in the Museum of Comparative Zoology, Harvard University, and are not included in the present study.

Doctors S. J. and I. Leland made a small collection in the Liberian interior; some of this material is in the American Museum of Natural History, New York, and some is in Carnegie Museum, the gift of Mr. B. Heineman, who acquired the Leland material.

The backbone of the present study is the collection I made in Liberia between November 1954 and June 1959 as an avocation. During the first thirty-two months my responsibilities as medical entomologist and administrator at the Liberian Institute of the American Foundation for Tropical Medicine confined my butterfly collecting to the vicinity of the Institute, near Robertsfield and Harbel. During the last eighteen months, however, my work for Riker Laboratories took me into the interior and was such that I visited many interesting localities. The total collection includes 6421 specimens, and adds 184 known species, five new genera and thirteen new species or subspecies to the fauna of Liberia (table 1).

Records of Liberian Butterflies. — The first systematic list of butterflies of Liberia was published by Buttikofer (1890) as an appendix to his account of the country. This list may have been compiled by Conrad Ritsema of the Leiden Natural History Museum but Buttikofer did not credit him with authorship and there is no evidence in the book itself that Ritsema was responsible. However, Buttikofer was no entomologist and the list seems to have been prepared by an

TABLE 1

Systematic Summary of the Liberian Butterfly Fauna with Special Reference to the Fox Collection

	Number of specimens Fox Coll.	Species previously known	New records Fox Coll.	New records C. M. Coll.	New sp. or ssp. descr.	Total known species	Possible additional species
Hesperiidae	663	31	73	5	4[a]	109	69
Papilionidae	178	16	2	0	0	18	5
Pieridae	435	17	5	0	0	22	5
Danaidae	155	5	0	0	0	5	0
Satyridae	748	16	11	0	0	27	10
Acraeinae	358	14	14	0	0	28	2
Nymphalinae	2810	88	37	2	5	127	21
Libytheinae	1	1	0	0	0	1	0
Liptenidae	140	39	12	1	2[b]	52	40
Liphyridae	23	2	8	0	0	10	2
Lycaenidae	899	51	20	3	1	74	100
Riodinidae	11	0	2	0	1	2	0
Totals	6421	280	184	11	13[a, b]	475	254

[a] plus two new genera.

[b] plus three new genera and two new tribes.

entomologist who was not a lepidopterist, specifications that fit Ritsema. Of the 105 entries, 15 were identified only as "species" of a genus. Two new names occur in this list (see under *Catuna* in the systematic part of the present work), both credited to Ritsema and neither described (therefore *nomina nuda*). Apparently these two names were taken from Ritsema labels in the Leiden Museum; their presence in the list shows only that the Leiden Collection was consulted and does not prove Ritsema's authorship. A footnote to the list reads, "In dieser Liste sind allein die bis heute bearbeiteten Gruppen aufgenominen." Apparently Buttikofer and his party did not necessarily themselves collect all the species mentioned.

In an appendix to Sir Harry Johnston's book (1906), Emily Sharpe listed 124 butterflies from Liberia, to which she prefaced, "The following list is compiled from Dr. Buttikofer's Reisebilder aus Liberia, to which I have added the additional species procured by Messrs, Harold Reynolds and F. J. Whicker. In addition to Dr. Buttikofer's work I have here referred to Professor Aurivillius' Rhapolocera Aethiopica".

Aurivillius (1898) seems to have had no knowledge of the Liberian fauna other than Buttikofer's list and his distributional remarks in

"Seitz" (1908-1925) apparently relied on Sharpe's notes. In neither of these works does Aurivillius seem to have had first hand familiarity with the Occidental fauna and he entirely failed to appreciate the zoogeographic differences between the Occidental and Equatorial areas. Many of the species described and figured by such early authors as Drury and Cramer, and especially those species cited as coming from "Guinea Coast", probably were actually collected in what is now Liberia. Aurivillius tried to identify most such names with subspecies in the Equatorial area, subspecies that often differ from those in Occidental Africa, and evidently interpreted "Guinea Coast" to mean Cameroons or Gabon. It is no wonder that Aurivillius thought that some of the early illustrations were somewhat inaccurate.

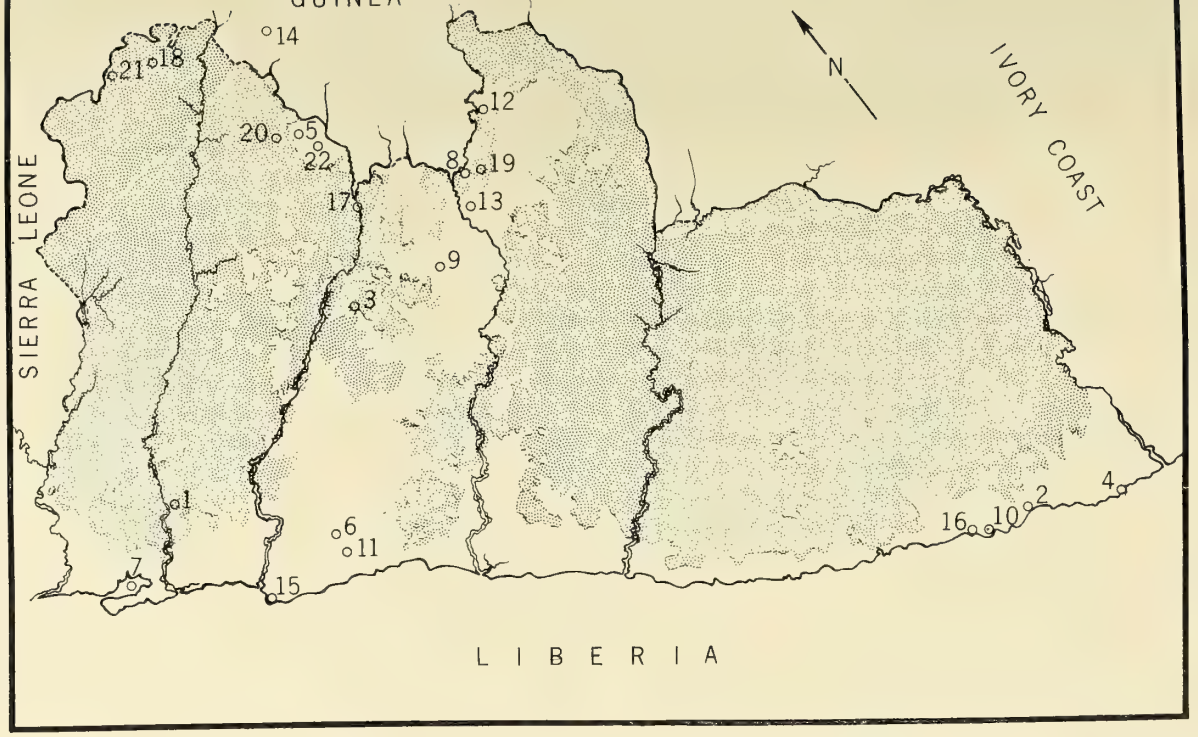
In 1948 P. L. Dekeyser and B. Holas visited eastern Liberia on a research mission for the Institut Français d'Afrique Noire as part of the Institut's careful program of investigations into the anthropology, natural history, geology and geography of Occidental Africa. An account of the itinerary of this expedition was published by Holas (1952). In view of the range of data collected by Dekeyser and Holas, it is surprising that they were able to find time to collect butterflies at all, but their material easily doubled the known butterfly fauna of the country. The lycaenids were listed by Stempffer (1950), the hesperids by Picard (1950), the papilionids and nymphaloids by Condamin (1951) and the pierids by Berger (1954). We have cited their data in the systematic part of this study, sometimes as from "eastern Liberia", sometimes by locality.

Wallace Peters was stationed at Kpain for several years as medical entomologist with World Health Organization. An enthusiastic lepidopterist, he made a large collection said to be in the British Museum. Only the lycaenids have been reported (Stempffer and Bennett, 1956, including a map of Peter's localities) and Clench has included these data in the systematic part of the present volume.

Collecting Stations. — For convenience of reference, collecting stations are arranged alphabetically in the following discussions and the list includes all localities cited from Carnegie Museum material. These localities are mapped (map 3) and the identification number used for each is entered below in parentheses following the name and coordinates.

Fig. 6. Access road through disturbed forest at Ganta. (Photographed by Jean W. Fox).

All four authors who listed Dekeyser-Holas material cited locality names by their French transliterations, versions that often differ materially from the official place names and quite impossible to locate on most maps. Holas (1952) mapped their positions and cited in his



Map 3. Liberia. The present distribution of primary rainforest is indicated by stippling. Numbered localities, discussed in the text: *1*, Bomi Hills. *2*, Bigtown. *3*, Bonata. *4*, Cape Palmas. *5*, Fisabu. *6*, Fish Lake. *7*, Fisherman's Lake. *8*, Ganta. *9*, Gbanga. *10*, Grand Cess. *11*, Liberian Institute for Tropical Medicine (L.I.T.M., Harbel on labels). *12*, Kitoma. *13*, Kpain. *14*, Pass in Wangazi Range on road from Macenta to 'Nzerekore, Republic of Guinea. *15*, Monrovia. *16*, Picnicess. *17*, St. Paul River at the Zorzor road crossing. *18*, Voinjama. *19*, Wanau Forest. *20*, Wozi. *21*, Yendamalahoun. *22*, Zorzor. (Sources: Aerial survey map published by U. S. Coast and Geodetic Survey, 1957; map privately published by Arthur Sherman in 1947).

discussions of localities both the official place name and the French transliteration of each. Most are in the watershed of the Cavalla River. We have merely quoted these names without attempting to correct them.

For Peter's localities see the map in Stempffer and Bennett (1956).

Of many place names in Liberia there is some doubt as to the correct spelling. The best maps at hand are Sherman, 1947, and the U. S. Coast and Geodetic Survey planimetric map, 1957, which disagree in numerous spellings. The latter map is based on aerial surveys and is accurate geographically but includes comparatively few place names and these are spelled in an unusual fashion; the former includes the names of far more places and the spelling appears to be more consistent with usage in Liberia (see Cole, 1956, especially pp. 190-193 and 196-199).

Bomi Hills. 6°53′ N, 10°52′ W. (1)

The Liberia Mining Company's compound at the Bomi Hills iron mine is situated in the southeastern corner of the Gola Forest in the Western Province about 42 miles inland and 65 miles from Monrovia. I spent a week there in April, 1955. Most of my collecting was along a trail that winds generally eastward from the water pumping station, traverses some agricultural lands for about a mile and a half and then enters the high virgin forest. Limited collecting also was done along a trail running northward into the forest along the Maher River from the then newly located sawmill. Both these trails are old tribal highways through gently hilly country.

Bigtown. 4°40′ N, 8°02′ W (?). (2)

There are a dozen places called "Bigtown" in Liberia, but the one where Naysmith collected undoubtedly was located near Cape Palmas. On a map in Buttikofer (1890: facing p. 430, vol. 1) this Bigtown is shown on the lower "Hoffmann River".

Bonata (Bonota). 7°06′ N, 9°45′ W. (3)

Some of the material in American Museum of Natural History collected by S. J. and I. Leland bears this locality. The town is about 25

miles northwest of Suakoko (on the main road from Monrovia to Ganta) and, according to aerial survey maps, is situated on the edge of the western forest.

Cape Palmas. 4°22′ N, 7°42′ W. (4)

This locality is recorded for Naysmith and Good material. The city of Harper, on Cape Palmas, was a port of call for coastal steamers before the deep water ports of Monrovia and Buchanan were built. Today it is visited mainly by small vessels and lighters. Agricultural lands now occupy the country behind Harper but when Naysmith and Good were there, the virgin forest probably was quite close to the sea.

Fisabu (Fissebu). 7°43′ N, 9°28′ W. (5)

Fisabu is a rather large town on the road toward Voinjama about five miles north of Zorzor. A jeep track leads northwest from Fisabu to Wozi. This track is a somewhat widened, "improved" tribal trail and characteristically does not hesitate to go straight up or straight down steep grades. The valleys are marshy with small meandering streams. Mud puddles on the track, especially near the marshes, are attractive to butterflies. Specimens recorded from Fisabu were collected along this track, nearer Fisabu than to Wozi, in tribal agricultural lands and secondary bush.

Fish Lake. 5°46′ N, 10°22′ W. (6)

This small swamp-fringed lake at the head of Fish Creek is near Robertsfield and just off the Firestone Rubber Plantation. The lake and swamp (fig. 4) are ringed with a belt of virgin forest from 200 to 500 yards wide (fig. 3); this in turn is surrounded by agricultural land, most of which is under constant cultivation and there is comparatively little secondary bush. The virgin character of the little forest around the lake has probably been preserved because of a religious association with the lake itself, which is under the special guardianship of an important local chief. Stempffer and Bennett (1956) incorrectly identify this lake as "Fisherman's Lake", probably on advice from Peters.

Fisherman's Lake (Lake Piso). 6°44′ N, 11°20′ W. (7)

The coordinates given above are for the center of the lake which is 19 miles long and 10 miles wide. Properly, it is a tidal lagoon and its correct name is Lake Piso. Used as a seaplane base and a stopover for the ferry bombers during World War II, American military personnel dubbed it "Fisherman's Lake" from the excellent sport they found there, and the Thomas material in Carnegie Museum bears this designation on some of the labels. Peter's material with this label came from Fish Lake.

Ganta (Gahnpe). 7°12′ N, 8°59′ W. (8)

During 1958 and 1959 I lived at the Methodist Mission in this town, located on the frontier with Guinea, and collected butterflies at all seasons of the year. Specimens so labelled in my collection were taken at one of three stations. (A), A thirty-acre stand of virgin rainforest associated with a similar acreage of secondary growth (fig. 6) about thirty years old and nearly at climax; this little forest, cut through by a swampy stream dammed at one point, was a tribal sacred grove at one time and has been kept intact on the mission grounds. (B), Dr. George Harley's yard, where lush cultivated flowering shrubs attracted many species. (C), Agricultural land on the mission, mainly attractive to pest species and grass-lovers.

The Leland material in Carnegie Museum is labelled Ganta, as are some specimens in American Museum of Natural History from Dr. Harley. I have no exact information on where the Lelands and Harley actually collected and their label probably includes material from Wanau Forest.

Gbanga (Gbarnga, Gbanta). 6°58′ N, 9°29′ W. (9)

This town is on the main motor road about 100 miles from Monrovia and 65 miles from Ganta. My collecting here was in a narrow forest along Beh Creek, which passes through the southern fringe of the town.

Gokai. 6°58′ N, 9°46′ W. (Not mapped)

A few specimens in American Museum of Natural History were captured by the Lelands at this small town and mission station about 12 miles south of Bonata.

Grand Cess. 4°38′ N, 8°13′ W. (10)

This label appears on Naysmith material, written in Ehrman's hand and sometimes spelled "Sess". The town on the coast about 60 miles from Cape Palmas probably was the correct locality and its coordinates are given above. Grand Cess is a stopover point for Kru fishermen and for the large canoes that ply the coast.

Harbel. See L.I.T.M. (11)

Kitoma. 7°17′ N, 8°45′ W. (12)

I used this locality for specimens taken west of the village itself in the forested hills, extensions of the Nimba massif. Some of Peter's material also bears this locality.

Kpain (Kpein, Kpaine). 7°05′ N, 9°05′ W. (13)

This small town, about fifteen miles southwest of Ganta on the motor road to Monrovia, is the site of the facilities of the World Health Organization unit in Liberia. I collected in open agricultural land surrounding the WHO compound and in a residual stand of virgin forest (since cut down) about a mile to the west. Peters was based at Kpain.

L.I.T.M. (also as Harbel) 5°46′ N, 10°22′ W. (11)

All the material in my collection labelled either Harbel or L.I.T.M. was collected in fact at or near the Liberian Institute of Tropical Medicine, where I lived from 1954 to 1957. Harbel proper is the area at the lower end of the Firestone Rubber Plantation where the principal administrative and industrial facilities are located and it constitutes a kind of capitol for the plantation. I used Harbel on labels because it is the name of the nearest post office, where mail for L.I.T.M. was received.

The actual collecting was in one of the following situations. (A), At flowers, shrubs, grass and low vegetation in the yard of the house I occupied. (B), Along a trail I cut through dense secondary growth

Fig. 7. Lawn behind house at L.I.T.M., with low secondary bush about five years old in the background. (Photographed by Jean W. Fox).

behind the house (fig. 7). This area had been under cultivation as recently as 1950, but had been allowed to grow wild after the Foundation acquired the use of the property. (C), Along the trail between the villages of Farwein and Howein (see Fox, 1957, map), about two miles west of the Institute compound (fig. 5). This trail, on leaving Farwein, passes along the margin of a stand of virgin rain forest preserved for religious reasons and locally known as "the devil bush." It is said that a Poro ritual site lies within this forest, but at the request of the local chief, I never entered it but kept to the trail. Beyond this forest stand the trail is tree-bordered as it passes through open fields. This section was most productive of lycaenids and hesperids. (D), A very little material was taken in the coastal grassy parks just a mile or so toward the sea from the Institute.

Macenta-'Nzerekore, Road between (Guinea). (14)

Macenta is a large market center in Guinea about 20 or 30 miles north of Voinjama; 'Nzerekore is a large spacious town at the northern fringe of the rain forest north of Ganta. I made no collections at

either town. In late April, 1958, travelling east from Macenta, I stopped at the pass in the Wangazi range about 8°00′ N, 9°10′ W, and found a large aggregation of butterflies around puddles left by a recent heavy downpour in a clearing in the virgin forest at considerable elevation. Later in the day, while waiting for the ferry to take us across the Woué River (a branch of the St. Paul, called Wuni River in Liberia), I collected at the river bank, in the surrounding bush and at cow dung.

Monrovia. 6°18′ N, 10°51′ W. (15)

The capitol of Liberia and principal port. Some of Good's material bears this label and was either collected near the city by Good himself or was acquired from enterprising local people.

Picnicess (Picininicess, Pigrinini Cess). 4°38′ N, 8°18′ W. (16)

Naysmith collected at this locality which appears with various spellings both on maps and on Ehrman's labels. It is on the coast about 72 miles above Cape Palmas.

St. Paul River at Zorzor Road. 7°18′ N, 9°31′ W. (17)

The road from Gbanga to Zorzor crosses the St. Paul River at a beautiful rocky rapids. Both banks of the river support a belt of virgin forest from one-half to two miles wide, forming a long corridor between extensive agricultural lands. The many islands in the river, covered with low vegetation, the many flat, wet rocks and the occasional mud bank attracts canopy species, while the trails in twilight on either side of the river have the usual forest floor species. In appearance, this locality is similar to that shown in figure 1.

Tuleman (Teleman, Telemai). 7°38′ N, 9°26′ W. (Not mapped)

A few specimens in American Museum were taken by the Lelands at this village, situated 12 miles south of Zorzor on the motor road, where there is a small mission station.

Voinjama (Vonjima). 8°24′ N, 9°45′ W. (18)

This large town is an administrative center near the northwestern corner of Liberia. I made overnight stops there in April 1958 and did a little collecting at the edge of the town. The whole area is hilly. Originally, it was rain forest interspersed with a few woodland parks but now is widely agricultural. Coffee is grown in the vicinity.

Voinjama-Yendamalahoun, Trail between.

A two-day hike behind porters in April 1958 took our party from Voinjama to Yendamalahoun along an arc-like route which reached at its midpoint 8°26′ N, along old and much used tribal trails. My Liberian assistant, Varney Doga, and I used our nets constantly. The route passed through four towns before reaching our destination and near these towns the forest was extensively cleared for field crops, coffee plantations and cola groves. As usual, the trails were lined with rain forest trees, many of them old and very large. Between towns we passed through substantial stands of virgin tropical forest. On some of the more rugged hills there were grassy woodland parks, generally not more than a few acres in size. These parks apparently mark thin topsoil immediately overlying bedrock and should not be confused with savanna, a superficially similar biotope but resulting from very different ecologic conditions.

Wanau Forest. 7°08′ N, 8°36′ W. (19)

This extensive area of primitive tropical forest, set aside as a natural reserve by the government, is situated 15 miles from Ganta by road and jeep track. It has been selectively lumbered by Ganta Methodist Mission personnel but the scientific methods used appear not to have altered the biotope in any way. An old tribal trail from Dengama to Gbeye passes through it; the northern part of this trail has been converted into a jeep track. Wanau village is about three miles in from the motor road, along which the land is largely cleared (figs. 8, 9), with the usual 80% of this cut-over land grown to various early stages of secondary bush. The jeep track passes through the village and penetrates the virgin forest (similar to the forest shown in figure 2) for about six miles, beyond which one must travel by foot on the old trail, still maintained by the people. The last few miles before reaching Gbeye also traverses agricultural land. Between the farmlands of

Fig. 8. A field planted to rice and corn in agricultural lands near Wanau village in Wanau Forest.

Wanau town and those of Gbeye is a magnificent and extensive stand of high forest. Many animals, including troops of monkeys and birds like the stately hornbill were seen there; species I rarely or never observed elsewhere. During 1958 and 1959 I collected regularly in Wanau Forest and in the fringing secondary growth.

Wozi. 7°48′ N, 9°32′ W. (20)

This is a Loma village northwest of Zorzor, reached by way of a very rugged jeep track leading in from Fisabu. The country is steep, though the hills are not high. Virgin rain forest begins about five miles in from Fisabu and reaches the very gates of Wozi which has its agricultural area mostly on the other side of the town. Material in my collection with the Wozi label was taken in November 1958 along a tribal trail leading northwest from Wozi through high forest and along the jeep track leading into the town through the forest.

Yendamalahoun. 8°24′ N, 9°45′ W. (21)

This town, the capitol of a large clan of the Gbandi tribe, is situated on a steep-walled, mesa-like hill overlooking the south bank of the Makona River. The surrounding country is extremely rough and hilly, mostly forested, and some woodland parks were observed. The agricultural areas associated with this town are in various separated valleys where the land is less steep, so that primitive forest grows close to the town. I spent a week here in April 1958. Most of my collecting was done along the tribal trail running westerly from the town, both in virgin forest and in corridors through disturbed areas.

Zorzor. 7°45′ N, 9° 26′ W. (22)

This large, important town and administrative center is situated on the motor road to Voinjama some miles beyond the St. Paul River. The surrounding countryside is almost entirely devoted to agriculture and very little primitive forest can be found nearby. I collected extensively in secondary bush, along the edges of fields and in swamps. Also bearing this label in my collection is rain forest material taken one afternoon along a trail beside the Via River, 19 miles north of Zorzor.

Observations on the Butterfly Fauna. — In retrospect, I regret that I did not think to keep more detailed field notes in Liberia, for it would have been an advantage to the present study to be able to distinguish specimens taken in the forest beside the Via River from those taken in disturbed areas around Zorzor, to distinguish specimens from the various biotopes grouped under my Harbel label, and so on. I can only excuse myself on the ground that my butterfly collecting was undertaken as a relaxation from other duties and responsibilities, as an activity I could not resist when I strolled along the trails on a Saturday or Sunday afternoon. I did not expect, at that time, to use my collection as the basis for a comprehensive study of Liberian butterflies but merely to supply Carnegie Museum with a representative series. In view of my casual collecting, it is the more remarkable that my material has yielded so much information.

With the data presented in the systematic portion of this work, the composition of the butterfly fauna of Liberia has become sufficiently

known to enable certain conclusions to be drawn. My personal familiarity with Liberia, gathered during nearly five years of residence and travel in the country, may provide my conclusions with a firmer basis and lend better validity to my observations. Too many observations and conclusions in the literature are based on a first hand knowledge only of pinned and preserved specimens.

Seasonal Variation. — In much of the Ethiopian region numerous butterflies exhibit a kind of alternation of generations between a dry season form and a wet season form, and often these two forms differ markedly from each other in coloring, pattern development and sometimes even in wing shape. The usual explanation for these differences is that they are the consequence of temperature and moisture variation during the critical development stages of the prepupa and pupa. If the critical stages are passed during a warm, dry period, the adult resulting is the "dry season form"; the "wet season form" results from the critical stages being passed during a cooler, wetter period; the wet season form flies at the beginning of the dry season and conversely. This explanation probably is true in the majority of cases, but definitive experimental evidence is lacking.

A glance at rainfall records in graph 1 reveals why, according to the foregoing explanation of seasonal forms, only the wet season forms should occur in coastal Liberia and why in the interior the dry season forms should be unusual. It must be emphasized that the so-called "dry season" of the Forest Zone is not comparable to the dry season of East Africa or of the Guinean Zone of Occidental Africa, either in its characteristics or its effect upon the ecological situation. At the coast, as exemplified by the seasonal distribution of rainfall at Robertsfield (graph 1) there is really no true dry season. Toward the interior where the total rainfall is less, as at Zorzor or Ganta, the dry season is quite short, rarely marked, and does not occur at all in some years.

Many species of the satyrid genus *Bicyclus* are responsive to seasonal variation throughout most of Africa, yet not one of the 520 specimens of *Bicyclus* I collected in Liberia is a dry season form. The single specimen of the nymphalid *Precis octavia* is, however, the dark dry season form. I captured it in March, 1958 during an unusual season — there had been no rain there since Christmas and for the first time in memory, the well at the Methodist Mission station nearly went dry.

Fig. 9. Another field planted to rice and corn near Wanau village, with primary forest in the background.

The various forms of *Precis pelarga* have always been said to be seasonal. That the usual explanation of seasonal forms may not be the correct one for this species is suggested by the series I collected in Liberia. Of eleven specimens, four have the falcate apex of the forewing associated by Aurivillius (1908-1925: 223) with the dry season, one is an "extreme wet season form" with rounded apex and very black ground color, while six are the "normal wet season form" with rounded apex and yellow-brown ground color. Three of those with the falcate apex were taken at Harbel in February and March, one was taken at Zorzor in November; dry season forms might occur in February and March but not at Harbel and certainly ought not to be found in November. On the other hand, the "extreme wet season form" was taken at Yendamalahoun in April near the end of the dry season. It is more than possible that genes rather than physiological responses are involved in the variations of *P. pelarga*.

Seasonal variations, like aberrations, have often been named in the past. Because such names are infrasubspecific, they are barred under the International Rules for Zoological Nomenclature (1961), and in this study we have either placed them as synonyms or ignored them.

Seasonal Flight Cycle. — At the coast where the severe rains occur from about June first to about October first, 90% of the specimens I caught were taken between October first and the end of May. During the rainy season I returned home on more than one afternoon with only a few specimens and sometimes I was empty-handed.

I found an analogous situation at Ganta and Wanau Forest, but there the continual rains are limited to August and September; these are the only unproductive months for collecting in the interior. During June and July the often violent rains are of short duration and there are many bright, sunny days or warm, humid, overcast days. Both months produced high numbers of individuals and species.

It appears, therefore, that most butterflies in Liberia adjust their cycles, of necessity, to the rainfall cycle. The heavy, nearly continuous rains probably destroy most adults. From June to September at the coast, and during August and September in the interior, there are almost no butterflies to be found, though just before these "killing" rains begin there are large numbers present. I found that the mosquito *Anopheles gambiae* does not breed during the heavy rains (Fox, 1957) because their breeding places are flooded and irrigated. In general, these periods of continual rain appear to be hard on most insects and require a protective response. In the case of *A. gambiae*, adults aestivate in places protected from the downpour; in the case of the butterflies, the rainy season seems to be passed either by immature instars or by adults that find protected resting places. Butterflies of this second category must be, I think, a small minority or else I would have found more individuals and more species flying between rains.

Ecological Distribution. — As a consequence of agricultural activity, large areas of Liberia, once virgin forest, now are growing to the various levels of disturbed forest discussed earlier (fig. 6). If such areas are allowed to grow without interference they will eventually reach climax and become primitive forest again. Thus, all stages of secondary bush and secondary forest are sub-climax; in terms of the flora, they are quantitative rather than qualitative variations of the primitive climax forest (Schnell, 1952). Field crop areas, secondary bush, tree crop plantations and secondary forest all support quantitative modifications of the original butterfly fauna.

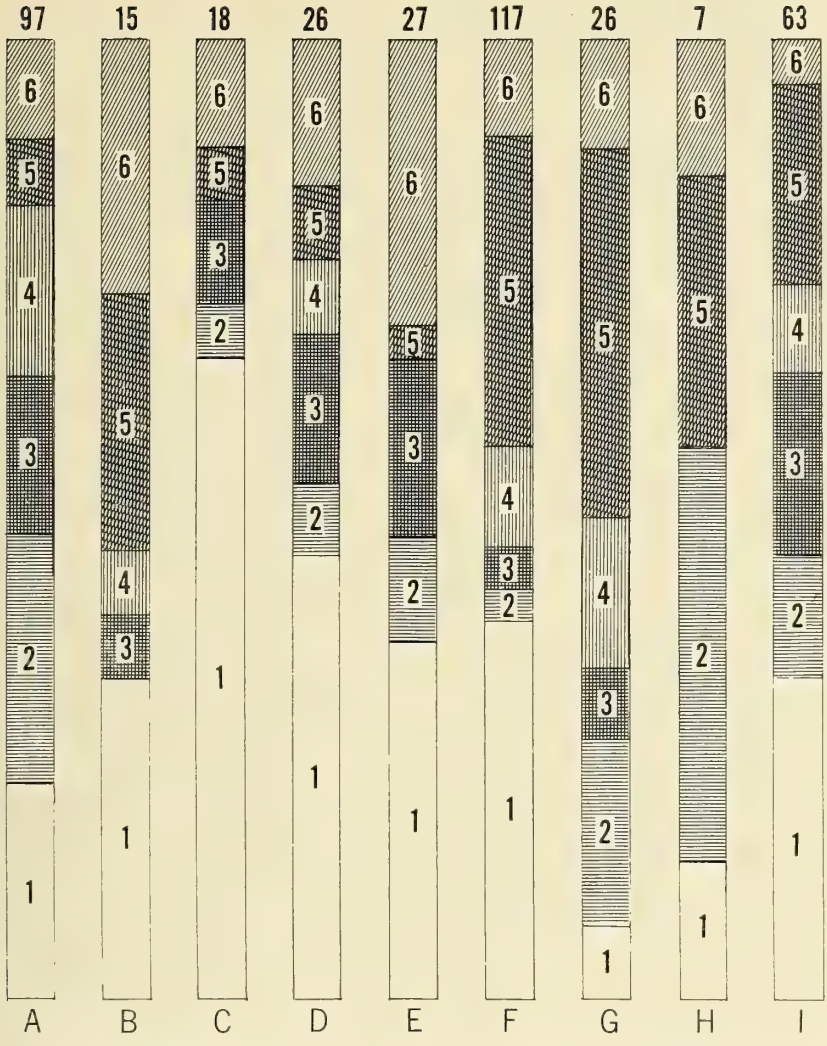
Relatively few of the forest butterflies are unable to make some de-

gree of adjustment to disturbed conditions. These few (such as *Papilio antimachus* or *P. zalmoxis*) appear to be ecologically restricted to the primitive canopy. Many of the forest species occur also in secondary forest and bush, sometimes being more common than in the primitive forest, but others apparently merely tolerate disturbed forest and are uncommon there. Butterflies usually found in forest clearings and along forest streams often are much commoner in disturbed areas and some flourish well in open fields.

The rain forest on the coastal shelf is characterized by a qualitative difference from the interior forest with respect to the butterfly fauna, a difference having no relationship to the question of agricultural use of formerly forested lands. In nearly all groups of butterflies there are a certain number of species found only in the coastal forest. In the interior forests these species are replaced by different but related species and the replacement species are, in turn, never found on the coast.

To evaluate the two kinds of differences — modifications resulting from disturbed ecological conditions and geographically inherent differences between the coast and interior — in the butterfly fauna, the locality records for each species in my collection were tabulated. For this purpose the ecologically similar localities were combined, resulting in three categories. (A), localities near the coast, including Harbel and Fish Lake, plus the lycaenids recorded from Robertsfield by Thomas and from "Fisherman's Lake" (Fish Lake) by Peters. (B), localities in the interior characterized by agricultural lands, secondary bush and disturbed forest, including Ganta, Kpain and Zorzor. (C), localities in the primitive forest, including Wanau Forest and Yendamalahoun. The species were then tabulated according to distribution, using six groups. (1), species found everywhere; (2), species found only at the coast (category A, above); (3), species found at the coast as well as in the interior (categories A and B), but not in primary forest; (4), species found only in disturbed areas of the interior (category B); (5), species found both in primary forest and disturbed areas of the interior (categories B and C); (6), species found only in primary forest.

Results of these tabulations are presented in graph 2 on a series of bars as percentages of the species belonging to each of eight major taxa. Further collections from Liberia will certainly provide data tending to modify these percentages, but even in the present state of knowledge the tabulations provide useful information. The percentage of generally distributed species (group 1) may be taken as indicative of the tendency for endemicity of a taxon. Where, as in Pieridae, the percentage is large, the taxon is expected to show a low rate of en-



Graph 2. Ecological distribution of major butterfly taxa in Liberia. *A*, Hesperiidae. *B*, Papilionidae. *C*, Pieridae. *D*, Satyridae. *E*, Acraeinae. *F*, Nymphalidae. *G*, Liptenidae. *H*, Liphyridae. *I*, Lycaenidae. Numbers above the bars indicate the number of species counted in each taxon. Numbers on the bars indicate the six distributional patterns discussed in the text: *1* (white), percentage of species found everywhere. *2* (horizontal lines), percentage of species found only near the coast. *3* (horizontal-vertical crosshatching), percentage of species found both near the coast and in disturbed situations in the interior, but not in primary forest. *4* (vertical lines), percentage of species found only in disturbed situations in the interior. *5* (vertical-diagonal crosshatching), percentage of species found both in primary forest and in disturbed situations in the interior, but not near the coast. *6* (diagonal lines), percentage of species found only in primary forest.

demicity; where the percentage is low, as in the Liptenidae, a high rate of geographic endemicity as well as of ecologic specificity may be expected.

In each taxon a certain percentage of species — about 27% in the Papilionidae, about 5% in the Lycaenidae — appear to be restricted to primitive forest, or at least to have a distinct preference for primitive forest. Some or many of these species eventually may turn up in disturbed forest, but probably only rarely. The large number (30%) of species of Acraeinae falling into this group is a surprise, as these butterflies are sometimes regarded as typical of sunny, open situations; possibly these forest species are primarily associated with but not restricted to the canopy.

Some species — about 43% of the Liphyridae, nearly 26% of the Hesperiidae, but only 3% of the Nymphalinae and none of the Papilionidae — have thus far been recorded only from coastal localities. Undoubtedly some of these species will be found in the interior, but others are geographically restricted to the coastal shelf forests and are replaced in the interior by species enumerated in groups 4, 5 or 6. An example of replacement (vicariant) species is found in the nymphalid genus *Catuna*. Of the four species in Liberia, two (*C. crithea* and *C. angustata*) occur everywhere in Liberia, but the other two are a replacing pair. *C. oberthuri* is found throughout the interior, but on the coast it is replaced by *C. niji*. A further example is the replacement of the coastal hesperid *Andronymus caesar* by *A. antonius* in the interior.

Vicariancy is not necessarily an all-or-nothing-at-all situation and may involve more than two species. Among the lycaenids, *Hypolycaena dubia, H. lebona* "form 2" and *H. lebona* "form 3" apparently have a statistically vicariant relationship. The two "forms" are believed to be species, but females are indistinguishable (see Clench's discussion in the taxonomic part of this work). *H. dubia* is commoner in the interior, where 79% of the specimens in my collection were found, than on the coast. It evidently is largely replaced on the coast by the two "forms" of *H. lebona;* 80% of "form 2" and 95% of "form 3" were taken at Harbel or Fish Lake.

The species with distributions falling into groups 3, 4 and 5 — and probably some now included in group 2 — all represent the modified

fauna of disturbed habitats. Group 5 — those recorded from Ganta, Kapain and Zorzor as well as from Wanau Forest and Yendamalahoun, clearly are species of the original forest fauna that thrive also in disturbed forest. I expect that the species in group 4 should also be found in primitive forest, at least in glades and clearings, when enough field work has been done. A spot check of a few of them (*Melantis chelys, Bicyclus safitza, Najas perseis, Neptis paula, Eurytela hiarbas*) shows that I found all of them in the little forest grove on the Ganta Methodist Mission compound and not in the open places or in secondary bush; these species should occur in nearby Wanau Forest as well.

Group 3 species, found everywhere except in the primary forest, includes all the sun-loving forms characteristic of open fields and young bush, in addition to some that prefer secondary forest. Nearly all of these species probably occur in primitive forest, where the canopy might afford a suitably sunny situation, but there are some exceptions. The nymphalid *Hamanumida daedalus* is one of these. I found it only on the bare ground around tribal homes or on dusty roads and it is hard to imagine where this species could find such places in the forest. *H. daedalus* probably is a true savanna species rather than a member of the rain forest fauna and the same may be true of a few others included under group 3.

By "savanna species" I mean those characteristic of the Guinean and Soudanese zones. Their presence in the Tropical Forest Zone presents some problems, the least of which is ecological since a variety of sunny dry situations occur in the Tropical Forest Zone of Liberia — open fields, young bush, roadsides, forest parks and mountain prairies — where many of the savanna plants thrive and could supply larval food. But all these places are relatively limited in size and are well separated from the true savanna to the north. The most interesting question is that of dispersal: how did these little patches of savanna-like biotopes come to be inhabited by species from the distant savanna?

Birket-Smith (1960a: 1276-1277) discusses two theories to account for the presence of savanna species in the Tropical Forest Zone of Cameroons. One of these theories, originally proposed by Schultze (1917), holds that the savanna element in the rain forest represents a relict fauna from a former drier period and predates, therefore, the

rain forest and the rain forest fauna in a given region. In 1917 this explanation might have seemed to be logical, but today the botanists, geologists, anthropologists and biogeographers have accumulated convincing evidence that the broad climatic trend in the entire Guinean Subregion is one of gradually increasing dryness, that the desert has been increasing in size, pushing the savanna zones southward, and that the northern limits of the tropical forest have been steadily withdrawn toward the coasts. Savanna-like situations in the tropical forest must be, therefore, more recent developments — probably even now they are gradually increasing — and certainly accelerated by increasing agricultural activity. It is not possible to believe that the savanna butterflies in question are relicts of a pre-forest era.

The second theory seems to be original with Birket-Smith, who saw in the forest canopy a dispersal route because it is sunny and drier and who personally noted swarms of migrating butterflies in Cameroons flying along or just beneath the canopy — though only a few of his observations included true savanna species. The canopy, in fact, offers the only credible route for dispersal from the savanna. One can easily imagine that population pressure in the Guinean savanna would lead to that often observed phenomenon, the migration of a species away from its center of population, and no doubt it was in this fashion that the sunny, dry places in the forests came to be inhabited by the species from the north. Certainly the harmattan winds of January would do nothing to discourage southerly migrations in Occidental Africa.

But still a third possibility occurs to me: the route of dispersal might have been through the forest itself for some of the savanna species. Merely because a butterfly is characteristic of the Guinean Zone does not necessarily prove that it cannot survive in the forest, only that it obviously prefers a dryer, more open situation and does not enter the forest willingly — a preference which might well be overcome once in a while by the same pressures which lead to migrations. Briefly, the savanna species need to be studied to determine which are indeed *restricted* to savanna biotopes and which only *prefer* them, but in an emergency could get along in non-savanna biotopes. This is only a theory, of course, and cannot be supported by presently available data, but it is worth investigating.

Endemicity. — Of the four species and nine subspecies described in the taxonomic section of this study, three species and eight subspecies are thus far known exclusively from Liberia. Because these eleven new taxa are such recent discoveries, their presently known distributions do not necessarily indicate a narrowly Liberian endemicity, though it is possible that some of them will prove to be that in the end. Meanwhile they should be looked for among material from the Tropical Forest Zone of Occidental Africa, particularly the rain forests adjacent to Liberia in Sierra Leone, Guinea, Ivory Coast and Ghana. The new subspecies are especially likely to be more generally distributed in Occidental Africa, as each of them has its nominate subspecies more or less widely distributed in Equatorial West Africa and some of them also have subspecies in East Africa.

The three new Liberian species, on the other hand, are more likely to have a limited distribution, though probably not just to Liberia. *Catuna niji* is at present known only from three individuals taken at Fish Lake and appears to form a replacement pair with *Catuna oberthuri* Karsch, which I found only at inland stations in Liberia. However, *C. oberthuri* is distributed throughout the Guinean Subregion, as are the other two species of *Catuna,* and it seems reasonable that *C. niji* will eventually be found elsewhere than in Liberia. *Andronymus antonius* presents exactly the same situation. *Caenides na* is known from a single male from Yendamalahoun in the northwestern corner of Liberia and certainly ought to occur across the frontier in the Sierra Leone and Guinea forests, but note that some of the species of this genus are rare and their known distributions are quite limited.

A very few butterflies have been recorded only from Sierra Leone and Liberia, among them three Nymphalinae: *Najas francina* (Godart), 1821; *Najas perseis* (Drury), 1773; *Neptis paula* Staudinger, 1896. All three species are distinctive, easily recognized and were described many years ago, so that it is just possible that their full distributions are already known. Nevertheless, more comprehensive field work in the rain forests of Guinea, Ivory Coast and Ghana might show their presence throughout Occidental Africa.

The geographic distribution of the primitive forests in Occidental Africa and throughout the Guinean Subregion was discussed previously, and it was pointed out that a continuous forest belt occurs from

eastern and northern Sierra Leone across the southern part of Upper Guinea (French sense), Liberia, Ivory Coast and Ghana (fig. 4). There is no serious barrier to distribution and gene exchange within a species in this entire belt, except for the comparatively few butterflies that are ecologically limited to primitive forest and cannot adjust to disturbed conditions of any kind. The wide belt of disturbed forest crossing central Liberia from Ganta and Zorzor to Monrovia and Marshall (fig. 1), and the belt of savanna nearly bisecting Ivory Coast apparently represent no barrier to the vast majority of species of the original forest fauna. It is exceedingly probable that any species found in one part of this forest belt can be found in all other parts; this expected distribution indeed occurs in all but a few cases and, as discussed in foregoing paragraphs, the apparent exceptions doubtless represent merely incomplete knowledge.

Also pointed out in a previous section of this discussion was the fact that the Guinean Zone supports numerous corridors, patches and islands of tropical forest. Lists of the butterfly fauna from these isolated forests in Senegal, Guinea Republic, Togo and Dahomey (numerous papers in Bulletin and Memoirs, Institut Français d'Afrique Noire) clearly demonstrate that the Guinean Zone fauna, like its flora, is made up of some of the Tropical Forest Zone species plus, in the case of butterflies, species that seem to prefer more open situations. Most of the butterflies found in Liberia in secondary bush and agricultural areas are also found in the Guinean Zone forest islands.

Occidental Africa is a definite biogeographic area which, despite the diversity of climates and biotopes, exhibits a certain homogeneity in its fauna and which differs in its faunistic composition from the Equatorial area and, of course, from other areas in Africa. This situation has not been well investigated in the past. Aurivillius (1898, 1908-1925) was one of the few lepidopterists who attempted to study the entire butterfly fauna of the whole Ethiopian Region. Apparently he knew the Occidental African fauna more by reputation than from personal observation and, while he was aware that some butterflies have different subspecies in the Occidental and Equatorial areas, he evidently failed to appreciate the full importance of the ecological discontinuity that separates them. Most major investigators have been primarily concerned with other areas of the continent. Chapin

(1932), dealing with the Congo, was more interested in defining its eastern biogeographic limits than with the division between what he called "Upper Guinea" and "Lower Guinea"; furthermore, certain insect groups probably are far more sensitive zoogeographic indicators than are birds, tradition notwithstanding.

That the biogeographic separation between the Occidental and Equatorial areas is a distinct one is well illustrated by Table 2, from which it is seen that 25% of the Occidental butterfly fauna is endemic; 10% of the species and 15% of the subspecies occurring in Liberia and the adjacent belt of forest are not distributed east of the ecologic discontinuity separating the Occidental from the Equatorial areas of the Guinean Subregion. These percentages are remarkably high in view of the essential similarity of the biotopes in the primitive forests of both areas. Table 2 also illustrates a characteristic difference among major butterfly taxa — their various degrees of endemicity. Both species of Riodinidae found in Liberia and two of the five Danaidae are endemic to Occidental Africa, but the single Libytheinae and all eight of the Liphyridae are widely distributed in tropical Africa and not confined to the Occidental area. Among taxa represented by larger numbers of species, only 12% of the Hesperiidae are Occidental endemics, but 64% of the Liptenidae and 32% of the Nymphalinae are not found in Cameroons and the Congo. Because so many systematists have not been aware of the significance of the differences between the Occidental and Equatorial areas, a fuller comparison of the two faunas may well show that in some taxa there is an even greater degree of endemicity.

The precise line of division between the two areas of the Guinean Subregion is not at present clear and it may vary geographically with the species or higher taxon. The discontinuity of high forest around the Gulf of Guinea, broken by the intrusion of broad belts of savanna in eastern Ghana, Togo, Dahomey and western Nigeria, superficially suggests that the biogeographic break might occur there, but such is not the case. These savannas are part of the Guinean Zone of the Occidental African area (figure 4) and support the Occidental fauna. In Carnegie Museum there is only a small representation from Nigeria, but material from two localities collected by Jackson and generously presented to us affords some suggestive data with respect to Nympha-

TABLE 2

Endemicity of butterfly groups in Occidental Africa

	Species counted	% Total endemicity	% Endemic species	% Endemic subspecies
Hesperiidae	134	12	6	6
Papilionidae	21	38	0	38
Pieridae	22	18	0	18
Danaidae	5	40	0	40
Satyridae	36	25	14	11
Acraeinae	30	27	3	23
Nymphalinae	142	32	13	20
Libytheinae	1	0	0	0
Liptenidae	64	64	41	23
Liphyridae	8	0	0	0
Lycaenidae	100	21	8	13
Riodinidae	2	100	50	50
Totals	565	25.5	10.2	15.3

linae. The collection from Awka, located about 6°10′ N, 7°05′ E, some 25 miles east of the Niger River about 140 miles from its mouth, includes a number of species or subspecies endemic to the Occidental area and none that are Equatorial endemics. In contrast, the collection from Obudu, approximately 6°40′ N, 10°45′ E and about 140 miles east of Awka, includes only Equatorial endemics and no Occidental endemics. Awka is in the Niger watershed, Obudu in the Cross River watershed; somewhere between these two stations is apparently the dividing line between Occidental and Equatorial Nymphalinae. Whether this line limits the maximal eastern extension of *all* Nymphalinae endemic to the Occidental area remains to be seen. It cannot be determined from material at hand. Furthermore, it may not be the eastern limit of range in other taxa. The question could only be decided by careful examination of large collections from numerous stations in eastern Nigeria and comparison with both the Occidental and the Equatorial faunas.

Classification. — At the very least, it may be said that the major classification of the Lepidoptera and of butterflies is in a state of flux that reflects both the diversity of the Lepidoptera and the diversity of taxonomists. In the original edition of his "Butterfly Book" (1898) Holland divided the Lepidoptera into Heterocera (moths) and Rhopalocera (butterflies), and for the latter used five families. Brues and Melander (1932) listed 18 families of butterflies grouped into two superfamilies, the Hesperioidea and the Papilionoidea. A diversity of

other classifications has been proposed with various pretensions of authority, but none seems acceptable. That of Ehrlich (1957, 1958), for example, sought to counteract what he considered "splitting" and reverted to a division of the Papilionoidea into five families, though not the same families Holland used.

The major classification of butterflies in the present work is entirely my own responsibility, though my collaborators concur in its general outline. The definitive classification of butterflies will eventually be devised by a person with the patience to study all characters — morphologic, physiologic, embryogenetic, ecologic and cytologic — of all butterfly species throughout the entire world, and with the wisdom to interpret his data flawlessly. I am not that person. I have circulated an outline of the classification used herein to a number of colleagues and have received many helpful suggestions. Be it noted that the comments accompanying the suggestions ranged from the view that my system over-lumps to the view that it over-splits. I claim for my system only that it works well enough, that it attempts to reflect phylogeny and that it is not too different from other systems. Classification is, after all, merely a convenient way of sorting diversity into order.

The old taxon "Rhopalocera" is convenient because it comprises all butterflies, but it is artificial. It has long been recognized that the skippers, for example, represent a distinct phylogenetic line only distantly related to other butterflies. That all the groups usually subsumed under Papilionoidea have a close common origin seems to me to be highly debatable; I suspect that our taxonomic thinking has been influenced by an assumption of close relationship based on superficial characteristics (all butterflies fly by day and have clubbed antennae!) not supported by the facts. But whether living butterflies all evolved from a remote common source or whether they are polyphyletic, they certainly fall into four distinct groups with respect to structure, embryogenesis (broadest sense; see Fox and Fox, 1964) and habits. In this paper these four major groups are called superfamilies. They might be called families, but to do so would require the use of an additional taxon somewhere between family and genus. The use of superfamily is more convenient, better enables reflection of presumed phylogeny, and does less violence to current thinking.

Accordingly, I make use here of Hesperioidea, Papilionoidea, Nymphaloidea and Lycaenoidea. Within each of these superfamilies the classification used is the responsibility of the collaborator involved: Lindsey and Miller for the Hesperioidea, Clench for the Lycaenoidea and I for the Papilionoidea and Nymphaloidea.

Procedure. — Whenever possible, geographic names are spelled according to the usage of the National Geographic Society (for which see maps of Africa published in National Geographic Magazine). Liberian place names are spelled in accordance with Cole (1956), except the localities for the Dekeyser-Holas Expedition. These localities, all in eastern Liberia and mostly in the Cavalla Valley, are quoted directly from the papers in which entomological results of the expedition were reported; they are French transliterations of local names and the official Liberian names are given and the places mapped by Holas (1952).

The dates and sometimes the authorship of early entomological works have long been vexing questions. The valuable and well known studies of Hemming have been followed for the works with which he dealt, especially those of Hübner. Brown (1941) has been followed for the dates and correct authorship of Cramer and Stoll (1775-1791), Latreille and Godart (1819-1823) and Doubleday, Westwood and Hewitson (1846-1852). For other questions, the Catalogue of the Library of the British Museum (Natural History) has been our authority.

The maps and graphs were prepared by Richard T. Satterwhite of the Carnegie Museum Section of Insects and Spiders. Morphologic drawings accompanying the taxonomic discussions were prepared by the respective authors of each section. Except as otherwise credited, I took all the photographs in this volume. The pictures of specimens were made with apparatus especially devised for the purpose, using a 35 mm. camera mounted on a bench. The principal fault of photographs made with this equipment is that every tear or pin hole in the specimens becomes visible because of the brilliantly lighted background used to eliminate shadows; these flaws could have been eliminated by retouching the prints, but we preferred not to do so.

Superfamily Hesperioidea

Family Hesperiidae

by A. W. Lindsey and Lee D. Miller[2]

Holland (1920: 249-250), commenting on the nearly 9000 Lepidoptera from the American Museum of Natural History Expedition to the Congo (1910-1912), lamented the paucity of Lycaenidae and Hesperiidae obtained, stating, ". . . it shows that the native collectors who were employed to gather insects concentrated their attention on the larger and showier species in other families." In all, the Lang-Chapin Expedition returned with only ninety-four skippers, about one percent of all specimens, despite Chapin's mention (1932: 428) of "small brown hesperiids just then [November and December, LDM] gathering by thousands in muddy spots." Holland had reason for his disappointment in the Lang-Chapin Hesperiidae. There are between 7000 and 10,000 Hesperiidae in the Carnegie Museum Collection of nearly 100,000 African butterflies, the skippers comprising seven to ten percent of all specimens.

Birket-Smith (1960b: 978-979) took strong exception to Holland's reason for the lack of skippers in many African collections, using for examples the collections of the Second German Central African Expedition (79 hesperiids in about 8000 specimens) and the Danish Expedition to Cameroon (30 skippers among 844 total Lepidoptera). He says, ". . . I am confident that with a single exception (*Pardaleodes reichenowi*) members of the Hesperiidae are only occasionally seen in the forest area . . ." Berger (1962) reported on a collection of hesperiids from Guinea and Ivory Coast containing 270 specimens of 106 species. We do not know what percentage of the "take" these Hesperiidae represent, but probably there were more than the one to three percent of skippers represented in the collections cited. The collection Berger recorded and that of the Carnegie Museum tend to dispute Birket-Smith's contention that West African skippers are rare.

[2] Though the senior author died prior to publication, this work has been a joint effort. Dr. Lindsey read and approved the final manuscript. All conclusions were jointly made and reflect the agreement of both authors.

The Fox Hesperiidae represent about ten percent of the total butterflies in the collection — 663 specimens of a 6420 total are hesperiids. This percentage is in keeping with that of the skippers in the collection of Carnegie Museum from Cameroon, Rio Muni, and Gabon. The Fox collection is not biased toward the large, showy Nymphalidae and Papilionidae, as others have been, and probably represents a truer picture of the fauna. More such collections are badly needed in West Africa. Ninety-six species are represented in the Fox material — some in long series, many others only singly.

From this material some distributional patterns emerge in western Liberia. Such species as *Coeliades libeon* (Herbert Druce), *Pyrrhochalcia iphis* (Drury), *Acleros mackenii* (Trimen), *Andronymus caesar* (Fabricius) and *Pteroteinon iricolor* (Holland) appear to be restricted to the humid forests of coastal Liberia (Harbel, Fish Lake, Bomi Hills), whereas others, such as *Coeliades c. chalybe* (Westwood and Hewitson), *Prosopalpus debilis* (Plötz), *Acleros placidus* (Plötz), *Andronymus antonius,* n. sp. and *Pelopidas mathias* (Fabricius), are apparently rare or absent in the coastal forests, but seem common in those of the interior (Ganta, Wanau, and other localities). Many other species are common in both the coastal and the interior forests. Examples of these are: *Tagiades flesus* (Fabricius), *Sarangesa tertullianus* (Fabricius), *Spialia ploetzi* (Aurivillius), *Ceratrichia phocion* (Fabricius), *C. n. nothus* (Fabricius), *Pardaleodes edipus* (Stoll), *P. sator* (Westwood and Hewitson), *P. tibullus* (Fabricius), *Xanthodisca rega* (Mabille), *Hypoleucis o. ophiusa* (Hewitson), *Meza meza* (Hewitson), *Pteroteinon caenira* (Hewitson), *Platylesches galesa* (Hewitson) and *P. c. chamaeleon* (Mabeille). The savanna skippers are barely represented in the Fox material, but Picard (1950) records *Fresna netopha* (Hewitson), a predominantly savanna species, from eastern Liberia.

Most Liberian Hesperiidae are strictly diurnal, but some members of *Pteroteinon* Watson, *Gretna* Evans and *Caenides* Holland, genera of large hesperiine skippers, have crepuscular habits, some being taken at light. Interestingly enough, several genera of large hesperiine skippers in other parts of the tropics are also crepuscular.

The arrangement of the genera is substantially that of Evans (1937) with modifications as cited in the text. Every effort has been made to

supply a complete, accurate synonymy for all Liberian hesperiids. All available distribution records of Liberian skippers are cited.

The male genitalia are figured from Liberian specimens when they are available. The genitalic figures of Evans (1937) are generally poor, often totally irreconcilable with material at hand. It is hoped our figures will facilitate the future identification of species from the Guinean Subregion.

The African Hesperiidae are divided into three subfamilies, all of which are represented in the Liberian fauna.

Subfamily COELIADINAE

The Coeliadinae, which reaches its maximum development in the Indo-Australian region, contains three African genera, all represented in the Liberian fauna. Since Evans' (1937: 1-2) key to the genera is incomplete, a key to the African coeliadine genera is provided here.

Key to the African Genera of Coeliadinae

1. Hindwing vein R_s arising opposite vein Cu_1, cell greater than half the length of hindwing ..... *Pyrrhochalcia* Mabille
   Hindwing vein R_s arising basad of vein Cu_1, cell half or less the length of hindwing 2
2. Discocellular vein of hindwing transverse, cell half the length of hindwing ..... *Pyrrhiades,* new genus
   Discocellular vein of hind wing produced posteriad, cell less than half the length of hindwing ..... *Coeliades* Hübner

Genus **COELIADES** Hübner

Coeliades Hübner, 1818 [1818-1825]: 31. Type species: *Papilio forestan* Stoll, designated by Hemming, 1935: 436.

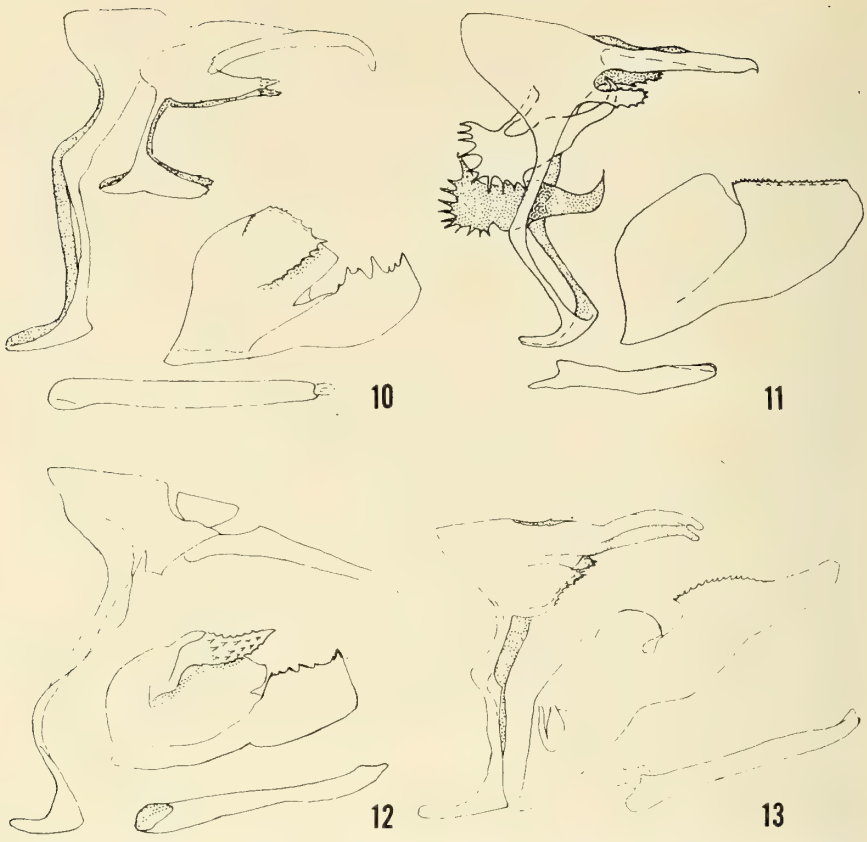
=*Rhopalocampta* Wallengren, 1857: 47. Type-species: *Papilio forestan* Stoll, designated by Scudder, 1875: 263.

Of the seventeen species assigned to this genus four are recorded from Liberia. Three other species are expected to occur there but have not been reported to date.

[**Coeliades bixana** Evans]

Papilio bixae Clerck, 1759: pl. 42, fig. 4 (not Linné) (no locality cited); preoccupied by *Papilio bixae* Linné, 1758, a neotropical species of the genus *Pyrrhopyge.*

Coeliades bixana Evans, 1940: 411 (Ghana).



Figures 10-13, ♂ genitalia. Fig. 10, *Coeliades c. chalybe,* Zorzor, Liberia. Fig. 11, *C. libeon,* Harbel, Liberia. Fig. 12, *C. f. forestan,* Cape Palmas, Liberia. Fig. 13, *C. hanno,* Ganta, Liberia.

Apparently *bixana* is unrecorded from Liberia, but it may be expected in at least the eastern part of the country. It has been reported from nearby Abidjan, Ivory Coast (Berger, 1962: 447), and Evans (1937: 11) records it from Ghana to Angola. There are specimens in Carnegie Museum from Ghana and Cameroon.

Coeliades chalybe chalybe (Westwood and Hewitson) (Fig. 10, ♂ genitalia)

Ismene chalybe Westwood and Hewitson, 1852 [1850-1852]: 515; pl. 79, fig. 2 (Guinea).

Evans (1937: 11-12) recognizes two subspecies, the nominate one from Gambia to Angola and east to Tanganyika; *C. c. immaculata* (Carpenter, 1935: 404) is known only from Abyssinia. The differ-

ences between the two subspecies, such as the absence of the white patch on the undersurface of the hindwing in *immaculata* are, however, quite striking and so marked that there is some doubt as to their conspecificity. We have seen no specimens of *immaculata* but only suggest the possibility that it is a distinct species.

Liberian records of the nominate subspecies, apparently the first for the country, are: Zorzor, 1 ♂, XI; Ganta, 2 ♀, V; Wanau Forest, 1 ♀, II, 1 ♂, 1 ♀, III, 1 ♂, V; Yendamalahoun, 1 ♂, 1 ♀, IV (Fox).

There are also specimens in Carnegie Museum from Ghana, Cameroon, Rio Muni, Gabon, the Congo and Uganda.

Coeliades libeon (Herbert Druce) (Fig. 11, ♂ genitalia)

Ismene libeon Herbert Druce, 1875: 416 (Angola).
=*Ismene unicolor* Mabille, 1877a: 39 (Congo).
=*Ismene andonginis* Plötz, 1884a: 60 (Pungo Andongo).
=*Ismene brussauxi* Mabille, 1890b: 221 (French Congo).

The male and female genitalia are both quite distinctive, especially as regards the palmate, anterior extension of the juxta in the male as shown in our figure, a feature unique among the African Hesperiidae. This feature, characteristic as it is, is not shown in Evans' (1937: pl. 8) figure of the male genitalia. This skipper is apparently abundant and widely distributed, being recorded from Ivory Coast (Berger, 1962: 448) to Kenya and south to Transvaal and Natal (Evans, 1937: 12).

Liberian records, apparently the first, are: Harbel, 1 ♂, 1 ♀, I (Fox).

In addition to the Liberian pair there are also specimens in Carnegie Museum from Cameroon, Gabon, the Congo, Uganda, Nyasaland and Southern Rhodesia.

Coeliades forestan forestan (Stoll) (Fig. 12, ♂ genitalia)

Papilio forestan Stoll, 1784 [1780-1784]: 210; pl. 391, figs. E and F ("Bengal Coast").

Two subspecies are recognized by Evans (1937: 13): the nominate one occurs from Senegal to Abyssinia and south throughout continental Africa; *C. f. arbogastes* (*Thymele arbogastes* Guenée, 1862: 19 [Madagascar] =*Ismene margarita* Butler, 1879c: 392 [Madagascar]) is found in Madagascar and the Seychelles. The exact systematic position of *arbogastes* is still a puzzle. The male genitalia

consistently differ from those of typical *forestan,* but *arbogastes* may be either a separate, but closely-related species or a widely divergent, isolated subspecies. We are inclined, until further data are available, especially from breeding experiments, to follow Evans and consider them subspecies.

Liberia: Cape Palmas, 1 ♀ (Naysmith), 1 ♂, IX (A. I. Good); Bigtown, 1 ♀ (Naysmith); Harbel, 2 ♀, IV, 1 ♂, X (Fox).

In addition to the above records there are also specimens in Carnegie Museum from Cameroon, Gabon, the Congo, Angola, Uganda, Kenya, Tanganyika, Nyasaland and Natal of the nominate subspecies, as well as specimens of *arbogastes* from Madagascar.

[Coeliades pisistratus (Fabricius)]

Hesperia pisistratus Fabricius, 1793 [1793-1794] (1): 345 ("America").
=*Rhopalocampta valmaran* Wallengren, 1857: 48 (Kaffraria).

This species is recorded from Sierra Leone (Evans, 1937: 14) and Adiopodoume, Ivory Coast (Berger, 1962: 448), and the former author lists records encompassing the area from Sierra Leone and Kenya to Natal. Although this predominantly savanna species has not been reported from Liberia, its presence there is quite possible on the basis of the above records. There are specimens in the collection of Carnegie Museum from Tanganyika, Southern Rhodesia, Transvaal and Natal.

Coeliades hanno (Plötz) (Fig. 13, ♂ genitalia)

Ismene hanno Plötz, 1879b: 363 (Accra).
=*Ismene necho* Plötz, 1884a: 63 (Guinea).
=*Rhopalocampta necho* ab. "tripunctata" Aurivillius, 1925 [1908-1925]: 509 (no locality cited).

C. hanno, described from a female, displays a greater degree of sexual dimorphism than any other member of the genus, the male long being considered a separate species (*necho* [Plötz]).

Evans (1937: 14) records *hanno* from Senegal to Angola, Uganda, and Tanganyika. There are specimens in Carnegie Museum from Ghana, Cameroon, Gabon, Congo, Uganda and Kenya.

Liberia: Ganta, 1 ♂, V (Fox).

[**Coeliades** (?) **aeschylus** (Plötz)]

Ismene aeschylus Plötz, 1884a: 65 (Senegal).

Since no material of this species is present in Carnegie Museum, we leave it tentatively in *Coeliades,* but the descriptions given by Plötz and Evans (1937: 10) suggest it may belong to the following genus. Thus far unknown from Liberia, *aeschylus* has been reported from Senegal (Plötz), the Federation of Mali (Berger, 1962: 447), and "Gambia to Gold Coast" (Evans, 1937: 10), suggesting that it may be taken in our area in the future.

PYRRHIADES, new genus

Type-species. — *Papilio lucagus* Cramer, 1777.

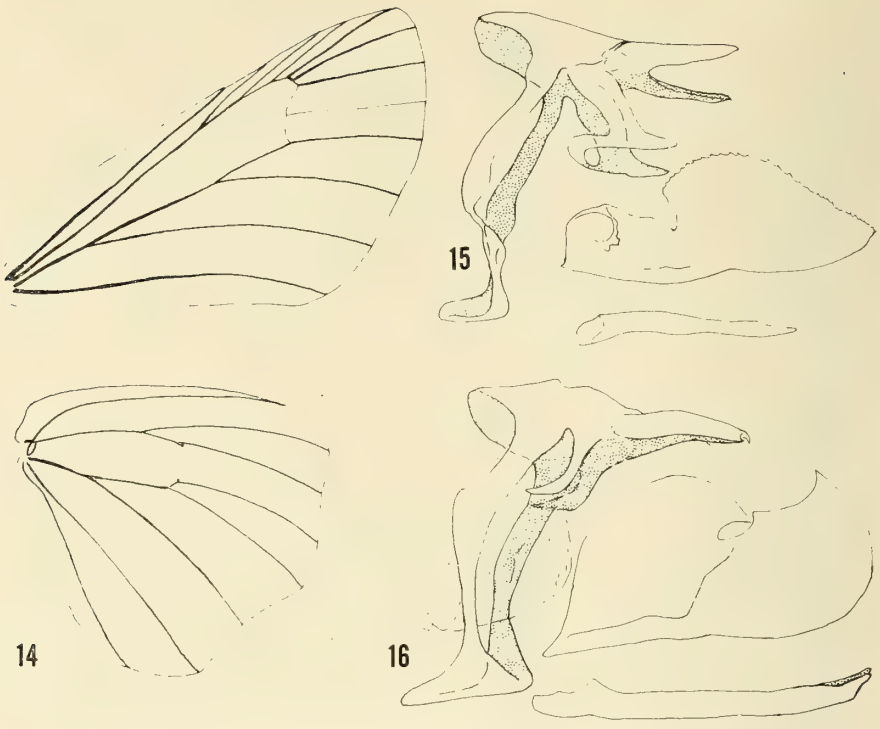
As in *Pyrrhochalcia* the antenna of the present genus is less than half the length of the forewing costa; in *Coeliades* the antenna is half the length of the costa. The palpus is similar to that of the other two genera, but the second segment is more angular. The body, similar to that of *Pyrrhochalcia,* is not so robust as that of *Coeliades.* As in *Pyrrhochalcia* the abdomen is nearly as long as the inner margin of the hindwing; in *Coeliades* the abdomen is much shorter. The chief differences in venation are on the hindwing: the weak discocellular vein is transverse in *Pyrrhochalcia* and *Pyrrhiades,* produced posteriad in *Coeliades.* The hindwing cell is over half the length of the hindwing in *Pyrrhochalcia,* about half the length of the wing in the present genus, and about one-third the length of the wing in *Coeliades.* As in *Coeliades* vein R_s of the hind wing arises basad of the origin of Cu_1; in *Pyrrhochalcia* these veins arise opposite one another.

This genus is approximately intermediate between *Coeliades* and *Pyrrhochalcia,* perhaps closer to the latter. A single species is known, but it is possible that *Coeliades* (?) *aeschylus* (Plötz) should also be included.

Pyrrhiades lucagus (Cramer) (Figs. 14, 15, wings, ♂ genitalia)

Papilio lucagus Cramer, 1777 [1775-1791], 2: 123; pl. 176, fig. G (no locality cited).
=*Ismene juno* Plötz, 1879b: 364 (Aburi). *Pyrrhochalcia juno* Aurivillius, 1925 [1908-1925]: 506. *Coeliades juno* Evans, 1937: 10; pl. 1, fig. 1.
Coeliades lucagus Evans, 1946: 641.

We agree with Evans' resurrection (1946: 641) of the Cramer name *lucagus* for this species, even though the Cramer plate and description both mention the red-tipped abdomen. The abdomen is red-tipped, but only ventrally. Nonetheless, we know no other species of hesperiid to which the description could refer. Evans (1937: 10) records *lucagus* from Guinea to Ghana.



Figures 14-16. Fig. 14, *Pyrrhiades lucagus*, new species, wing venation. Fig. 15, *P. lucagus*, ♂ genitalia, Cape Palmas, Liberia. Fig. 16, *Pyrrhochalcia iphis*, ♂ genitalia, Harbel, Liberia.

Liberian records, again the first for the country, are: Cape Palmas, 1 ♂, 1 ♀, IV; Grand Cess, 2 ♀, XI (Naysmith).

There are also specimens from Ghana and Sierra Leone in the collection of Carnegie Museum.

Genus **PYRRHOCHALCIA** Mabille

Pyrrhochalcia Mabille, 1904: 89. Type-species: *Papilio iphis* Drury, by monotypy.

The single member of *Pyrrhochalcia* is common in parts of Liberia.

Pyrrhochalcia iphis (Drury) (Fig. 16, ♂ genitalia)

Papilio iphis Drury, 1773 [1770-1782], 2: 27; pl. 15, figs. 3, 4 (Senegal).
=*Papilio phidias* Cramer, 1779 [1775-1791] 3: 85; pl. 244; figs. A, B. ("China").
=*Papilio jupiter* Fabricius, 1787: 87 (Sierra Leone).

This magnificent skipper, the largest in the African fauna, seems to be restricted to the very wet, coastal rain forest in Liberia. Fox further notes the aberrant flight of *iphis*, not at all like most hesperiids, a flight more closely resembling that of a saturniid moth. Although it is active during the daylight hours, this species also flies into the evening, Fox collecting one specimen at light in Harbel. *P. iphis* is recorded from Senegal to Gabon and east into the Congo wherever humid rain forests prevail (Evans, 1937: 15). It is apparently abundant where found.

Liberia: Kaoukeye, 1 ♀, III (Picard, 1950: 625); Liberia, 1 ♂, 1 ♀; Cape Palmas, 1 ♂ (Naysmith); Harbel, 3 ♂, 2 ♀, I, 7 ♂, 1 ♀, II, 6 ♂, 2 ♀, III, 1 ♂, 2 ♀, IV, 1 ♂, V, 1 ♂, VI, 1 ♀, VIII, 1 ♂, 1 ♀, X, 1 ♂, XI, 2 ♂, XII; Bomi Hills, 4 ♂, 1 ♀, IV (Fox).

In addition to the Liberian material Carnegie Museum has specimens from Sierra Leone, Ghana, Cameroon, Gabon and the Congo.

Subfamily Pyrginae

This subfamily, which includes the *Celaenorrhinus* and *Gomalia* groups of Evans (1937), contains fifteen African genera, twelve of which occur or should be expected to occur in Liberia. The genera are well separated by the keys to the above-mentioned groups in Evans (1937: 2-3).

Genus **KATREUS** Watson

Choristoneura Mabille, 1889: 156. Type-species: *Choristoneura apicalis* Mabille, by monotypy; preoccupied by *Choristoneura* Lederer, 1859.

Katreus Watson, 1893: 115. Type-species: *Astictopterus johnstonii* Butler, by monotypy.

=*Ortholexis* Karsch, 1895: 319. Type-species: *Ortholexis melichroptera* Karsch, by monotypy.

=*Loxolexis* Karsch, 1895: 320. Type-species: *Loxolexis percnoptera* Karsch, by monotypy.

=*Acallopistes* Holland, 1896: 95. Type-species: *Erionota holocausta* Mabille, by original designation.

=*Daratus* Lindsey, 1925: 84. Proposed to replace *Choristoneura* Mabille.

This is a small genus of rare skippers of the Guinean Subregion containing three species, all of which are to be expected in Liberia, though only one has been recorded to date.

[**Katreus johnstonii** (Butler)]

Astictopterus johnstonii Butler, 1887: 573 (Rio del Rey).
=*Choristoneura apicalis* Mabille, 1889b: 156 (Sierra Leone).
=*Loxolexis percnoptera* Karsch, 1895: 322 (Cameroon).

In addition to the three type localities this skipper is recorded from Abengourou, Ivory Coast (Berger, 1962: 448). Since it is recorded from Liberia's eastern and western neighbors, we expect *johnstonii* will eventually be found in Liberia. There is a single specimen of this rare butterfly in Carnegie Museum from Cameroon.

[**Katreus holocausta** (Mabille)]

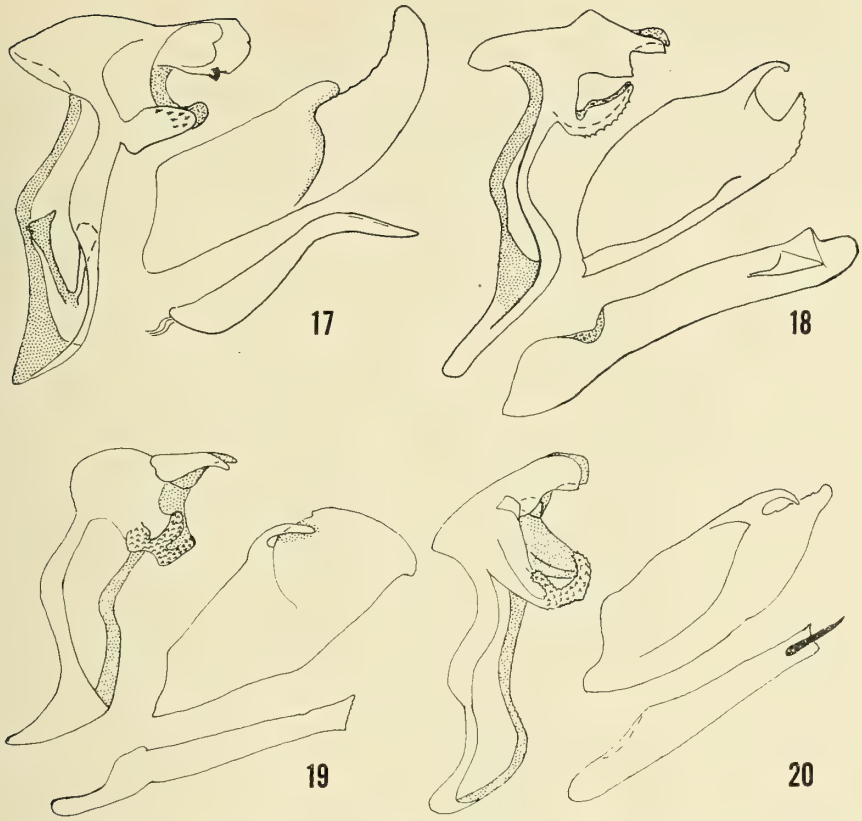
Erionota holocausta Mabille, 1891: 111 (Cameroon).
=*Ortholexis melichroptera* Karsch, 1895: 320 (Cameroon).

Evans (1937: 17) records this species from Sierra Leone, Nigeria, and Cameroon, a distribution which suggests it may be found in Liberia, though it has not been reported from there. *K. holocausta* is apparently extremely rare; it is unrepresented in the collection of Carnegie Museum.

Katreus dimidia (Holland) (Fig. 17, ♂ genitalia [f. *hollandi*])

Acallopistes dimidia Holland, 1896: 97; pl. 5, fig. 7 (Gabon).
=*Ortholexis hollandi* H. H. Druce, 1909: 407 (Cameroon).
=*Katreus dimida* f. *drucei* Evans, 1937: 17 (Cameroon).
=*Katreus dimidia* f. *karschi* Evans, 1937: 17 (Casualalla, N. Angola).

All the above names are retained by Evans (1937: 17) as "forms", but they are so diverse as to cast doubt upon their conspecificity. Available material is insufficient to determine the true identity of these names, but Evans claims the male genitalia of all but typical *dimidia* (which he did not see) are alike. The Carnegie Museum Collection contains only two males of *"hollandi"*, a female of *"drucei"*, and a female of *"karschi"*; there are no specimens of the nominate form at hand. At present it is desirable to retain the "forms" of Evans, whatever their systematic validity, to call attention to the variability present in material of *"dimidia"*, though no further systematic decisions can be rendered upon them at this time. In its various "forms" *dimidia* is recorded from Cameroon, Angola, and the Congo (Evans, 1937: 17).



Figures 17-20, ♂ genitalia. Fig. 17, *Katreus dimidia,* Fish Lake, Liberia (note: this specimen is referable to form "hollandi"). Fig. 18, *Celaenorrhinus proxima,* Ganta, Liberia. Fig. 19, *C. galenus,* Efulen, Cameroon. Fig. 20, *C. ovalis,* Bule Country, [Cameroon].

A specimen from Liberia, referable to the form *"hollandi",* and apparently the first record: Fish Lake, 1 ♂, I (Fox).

The other specimens in Carnegie Museum are from Cameroon, Gabon and the Congo.

Genus **CELAENORRHINUS** Hübner

Celaenorrhinus Hübner 1819 [1816-1826]: 106. Type-species: *Papilio eligius* Cramer, designated by Scudder, 1875: 137.
=*Apallaga* Strand, 1911: 143. Type-species: *Apallaga separata* Strand, by monotypy.

This is the only pantropical hesperiid genus presently recognized as having members in the Ethiopian, Indo-Australian, and Neotropic

regions. There are twenty-three African species, three of which have been collected in Liberia, and two others may be expected there. A sixth species, *C. rutilans* (Mabille, 1877a: 40 [Congo]), is recorded by Evans (1937: 25) from as far west as Ghana and could be a part of the Liberian fauna. It is not recorded from Ivory Coast or Guinea by Berger (1962). There are specimens in Carnegie Museum from Cameroon, Gabon, and the Congo.

Celaenorrhinus proxima (Mabille) (Fig. 18, ♂ genitalia)

Plesioneura proxima Mabille, 1877c: 231 (Congo).
=*Tagiades elmina* Plötz, 1879b: 362 (Cameroon).
=*Celaenorrhinus proxima toro* Evans, 1937: 20 (Toro, Uganda).

Evans' subspecies *toro* does not appear worthy of retention. The characters he cites for separating it from *proxima* — the smaller size and the separation of the forewing spot between the cubitals from the rest of the central band — appear throughout the series in Carnegie Museum, including the Liberian material, as individual variants. This species is recorded from Sierra Leone to Gabon and east to Kenya and Tanganyika (Evans, 1937: 20), and Berger (1962: 448) lists many records from Ivory Coast and one from Guinea.

Liberian records, apparently the first for the species are: Ganta, 1 ♀, II, 1 ♀, V, 2 ♂, 2 ♀, VI (Fox). This is one of the species that is rare to absent in coastal Liberia.

Celaenorrhinus galenus (Fabricius) (Fig. 19, ♂ genitalia)

Hesperia galenus Fabricius, 1793 [1793-1794] (1): 360 ("Indiis").
=*Pardaleodes fulgens* Mabille, 1877c: 236 (Congo).
=*Plesioneura biseriata* Butler, 1888: 97 (Kilimanjaro).
=*Coladenia maculata* Hampson, 1891: 183 (East Africa).
=*Plesioneura hoehneli* Rogenhofer, 1891: 463; pl. 15, fig. 10 (Marangu).
=*Celaenorrhinus intermixtus* Aurivillius, 1896: 280; fig. 14 (Cameroon).
=*Celaenorrhinus opalinus* Butler, 1900: 942; pl. 58, figs. 10, 11 (East Africa).
=*Celaenorrhinus galenus* variation *allaudi* Mabille and Boullet, 1916: 244 (Kilimanjaro).
=*Celaenorrhinus galenus* variation *jeanneli* Mabille and Boullet, 1916: 245 (Kenya).

Evans (1937: 21-22) retains "*galenus*", "*intermixtus*", "*opalinus*", and "*biseriata*" as forms. In view of the variation in the series of *galenus* in Carnegie Museum, these names cannot be retained as geographic subspecies. All material is best referred to as *galenus*.

Berger (1962: 449) indicates this species is common in Guinea

and Ivory Coast (including one he refers to *"intermixtus"*). The range of the species as recorded by Evans (1937: 21-22) is Sierra Leone and Guinea to Gabon and east into East Africa.

The first Liberian records for this species are: Yendamalahoun, 1 ♀, IV, and Wanau Forest, 1 ♀, X (both Fox).

There is comparative material in Carnegie Museum from Cameroon, Gabon, Congo, Uganda and Kenya.

[Celaenorrhinus medetrina (Hewitson)]

Pterygospidea medetrina Hewitson, 1877b: 322 (Fernando Po).
=*Pardaleodes interniplaga* Mabille, 1891: 73 (Cameroon).
=*Celaenorrhinus pooanus* Aurivillius, 1910: 521 (Fernando Po).

This species is included as a possible member of the Liberian fauna on the basis of a record (Berger, 1962: 449) from Seredou, Guinea. Evans (1937: 22-23) records it from Nigeria, Fernando Po and Cameroon, and there are specimens in Carnegie Museum from the latter country.

Celaenorrhinus ovalis Evans (Fig. 20, ♂ genitalia)

Celaenorrhinus medetrina ovalis Evans, 1937: 23 (Upper Kasai district, Congo).

This species was described as a subspecies of the preceding species, despite overlapping ranges: *medetrina* is recorded from Nigeria, and *ovalis* from Ghana and the Congo. Carnegie Museum has specimens of each taken about the same times in Efulen, Cameroon, and the two species are definitely sympatric there. The male genitalia are very similar, differing only in minor respects. Pending further evidence on habits and interfertility, or lack thereof, they are best considered separate, but closely related, species.

A Liberian specimen, the first record from this area, is: Gbanga, 1 ♀, VII (Fox).

[Celaenorrhinus boadicea (Hewitson)]

Pterygospidea boadicea Hewitson, 1877b: 323 (Gabon).
=*Pardaleodes atratus* Mabille, 1891: 74 (Sierra Leone).
=*Celaenorrhinus collucens* Holland, 1894b: 90; pl. 3, figs. 3, 4 (Ogove).
=*Pardaleodes lucens* Holland, 1896: 14 (Mabille Ms.).

This species shows the greatest sexual dimorphism of any member

of the genus in Africa, the male long being known as *boadicea* and the female as *atratus*. Since is has been taken in Sierra Leone and Nigeria (Evans, 1937: 26), it should be sought in Liberia. It is not recorded by Berger (1962). Carnegie Museum has specimens from Cameroon and Gabon.

Genus **AURINA** Evans

Aurina Evans, 1937: 26. Type-species: *Aurina dida* Evans, by original designation.

The single species should occur in at least eastern Liberia.

[**Aurina dida** Evans]

Aurina dida Evans, 1937: 26; pl. 2, figs. 10, 11; pl. 10 [♂ gen.] (Dimbrok, Ivory Coast).

The type pair, so far the only specimens recorded, are from near Liberia, suggesting this species may be a part of its fauna.

Genus **TAGIADES** Hübner

Tagiades Hübner, 1819 [1816-1826]: 108. Type-species: *Papilio japetus* Cramer, designated by Butler, 1870c: 99.
=*Pterygospidea* Wallengren, 1857: 53. Type-species: *Papilio flesus* Fabricius, designated by Scudder, 1875: 260.

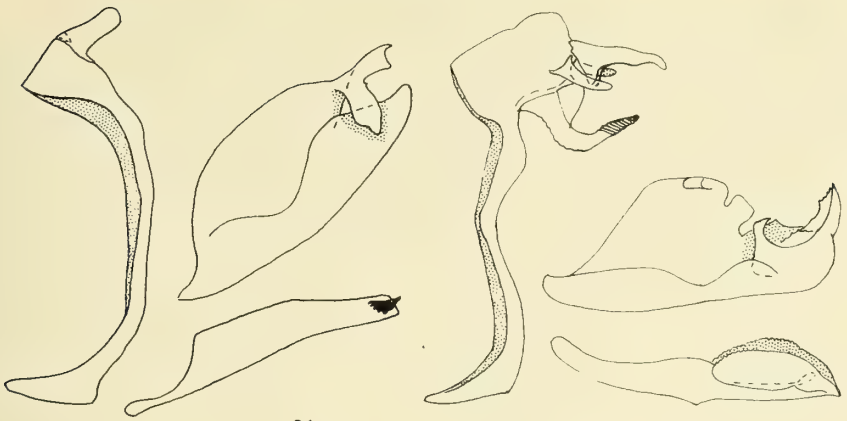
This genus, which is better represented in the Indo-Australian fauna, contains three African species, two of which are restricted to Madagascar and the Comoro Islands. The third species has a wide range throughout Africa, including Liberia.

Tagiades flesus (Fabricius) (Fig. 21, ♂ genitalia)

Papilio flesus Fabricius, 1781: 155 (West Africa).
=*Papilio ophion* Drury, 1782 [1770-1782], 3: 21; pl. 17, figs. 1, 2 (Sierra Leone).
=*Tagiades flesus* form *ophelia* Evans, 1937: 28 (Kikura River, Lifura Valley, Congo).

A thorough examination of the specimens in Carnegie Museum shows no reliable basis for separating the dry season form *ophelia* from typical *flesus*. Many of the specimens show intermediate conditions of both characters Evans used to separate *ophelia* — the gray overscaling of the hindwing upper surface and the reduction of the hyaline spots on the forewing. Retention of the name "*ophelia*" for any purpose seems inadvisable.

Evans (1937: 28) records *flesus* from Senegambia east to Abyssinia and south to South Africa. It is apparently abundant.



21 22

Figures 21-22, ♂ genitalia. Fig. 21, *Tagiades flesus,* Harbel, Liberia. Fig. 22, *Eagris d. denuba,* Efulen, Cameroon.

Liberia: Harbel, 1 ♀, II, 1 ♂, 2 ♀, III, 1 ♂, 1 ♀, V, 1 ♂, VI, 1 ♂, X, 1 ♀, XI; Bomi Hills, 1 ♂, IV; St. Paul River at Zorzor Road, 1 ♂, V; Zorzor, 1 ♂, XI; trail near Fisabu, 1 ♀, XI; Ganta, 1 ♀, V, 3 ♂, 3 ♀, VI, 1 ♂, VII; Wanau Forest, 1 ♂, VI, 1 ♂, X; and Yendamalahoun, 1 ♂, IV (Fox); Liberia, West Africa, 2 ♂ (A. C. Good).

This Liberian series is comparable in all respects with the remainder of the Carnegie Museum material — over two hundred specimens from Cameroon, Rio Muni, Gabon, Congo, Kenya, Tanganyika, Nyasaland and South Africa (Natal).

Genus **EAGRIS** Guenee

Eagris Guenée, 1862: 19. Type-species: *Hesperia sabadius* Grey, by monotypy.
=*Tricosemeia* Holland, 1892b: 294. Type-species: *Tricosemeia subolivescens* Holland, by original designation.

This genus, which is rather closely related to *Tagiades,* contains nine species, one of which has been recorded from Liberia. Four others are included as probable members of the Liberian fauna.

Holland (1892b) divided the *hereus* group from the remainder of *Eagris* as the genus *Tricosemeia,* distinguished by the presence of a brand on the base of the hindwing costa and a hair tuft on the undersurface of the forewing, both in the male. Evans (1937: 29) considers this unnecessary since the male genitalia of both groups show

close affinities. All of the species are here retained in *Eagris*, but Holland's distinction is used to delimit the two species groups. The presence of the brand on the costa of the hindwing upper surface is unusual in the African Pyrginae, recalling the neotropical genera *Pellicia*, *Nisoniades*, and others.

The **sabadius** group

This group is characterized by a more or less well developed forewing coastal fold in the male. Of the six species assigned to this group, one is definitely Liberian, and another will probably be found there eventually.

Eagris denuba denuba (Plötz) (Fig. 22, ♂ genitalia)

Antigonus denuba Plötz, 1879b: 361 (Aburi).
=*Eagris decolor* Mabille, 1889: 155 (Freetown, Sierra Leone).

Evans (1937: 31) recognizes two subspecies, the nominate one being found from Guinea to Cameroon, and *E. d. obliterata* Carpenter (1928: 48; pl. 2, figs. 5, 6 [Didinga, South Sudan], described as a var. of *E. lucetia*) is known only from the type locality and Abyssinia.

Evans' (1937: 10) figure of the male genitalia is extremely poor, leaving some doubt in our minds as to what species he was representing. The configuration of the valva differs so radically from that shown in his figure that it is unrecognizable, but his representation of the uncus and tegumen is recognizable and provides a basis for identification. If his figure were drawn from the male of *obliterata* (there are no comparative specimens in Carnegie Museum of this insect) that he cites, there is doubt as to its conspecificity with *denuba*.

The single Liberian record is: Wanau Forest, 1 ♂, X (Fox).

Unfortunately this Liberian specimen lacks the tip of the abdomen, so no genitalic dissection could be made. There is, however, a long series from Cameroon in the Carnegie Museum Collection.

[**Eagris tigris** Evans]

Eagris tigris Evans, 1937: 33; pl. 2, fig. 13 (Bugoma Forest, Unyoro, Uganda).

Described from specimens taken in Nigeria, Cameroon, Angola, Congo, South Sudan, and Uganda, *tigris* is considered a possible mem-

ber of the Liberian fauna on the basis of a record from Ivory Coast (Berger, 1962: 449). There are specimens in Carnegie Museum from Uganda.

The **hereus** group

These species are distinguished by the brand on the costa of the hindwing upper surface and the hair tuft on the under surface of the forewing of the male.

[Eagris subalbida subalbida (Holland)]

Sarangesa subalbida Holland, 1894a: 26; pl. 1, fig. 7 (Kangwe, Ogove River).
=*Sarangesa theclides* Holland, 1896: 8; pl. 5, fig. 3 (Gabon).
=*Trichosemeia tetrastigma* var. *albiventer* Strand, 1912c: 44 (Cameroon).
=*Sarangesa thecla* var. *obscura* Aurivillius, 1925: 1255; pl. 50, fig. 13 (Molundu, Cameroon).

Of the two subspecies Evans (1937: 33) recognizes, the nominate one is Guinean. *E. s. aurivilli* (Neustetter, 1927b: 32 [Uganda], as *Sarangesa aurivilli*) is known from eastern Cameroon to Uganda. Berger (1962: 449) records the nominate subspecies from Adiopodoume, Ivory Coast, suggesting its occurrence in Liberia. There are specimens in Carnegie Museum of the nominate subspecies from Cameroon and Gabon.

[Eagris hereus (Herbert Druce)]

Tagiades hereus Herbert Druce, 1875: 417 (Angola).
=*Ceratrichia quaternata* Mabille, 1889: 156 (Sierra Leone).
=*Trichosemeia birgitta* Strand, 1912d: 128 (Cameroon).

Evans (1937: 33) records this species from Sierra Leone and Ghana to Angola, and Berger (1962: 450) reports specimens from Guinea and Ivory Coast. On the strength of these records *hereus* almost certainly occurs in Liberia, but it has not been taken to date. There is a short series in Carnegie Museum from Cameroon.

[Eagris tetrastigma subolivescens (Holland)]

Tricosemeia subolivescens Holland, 1892b: 294 ("Matabeleland").
=*Trichosemeia tristifica* Aurivillius, 1925 [1908-1925]: 579; pl. 76b (No locality cited).

Evans (1937: 34) suggests that the type probably came from West

Africa. He may be right, but redesignation of type localities should be done carefully. He records this subspecies from Ivory Coast and Ghana, and Berger (1962: 450) lists specimens from the former country, suggesting that it probably occurs in Liberia, although it has not been recorded as yet.

Genus **CALLEAGRIS** Aurivillius

Calleagris Aurivillius, 1925 [1908-1925]: 571. Type-species: *Antigonus jamesoni* Sharpe, by monotypy.

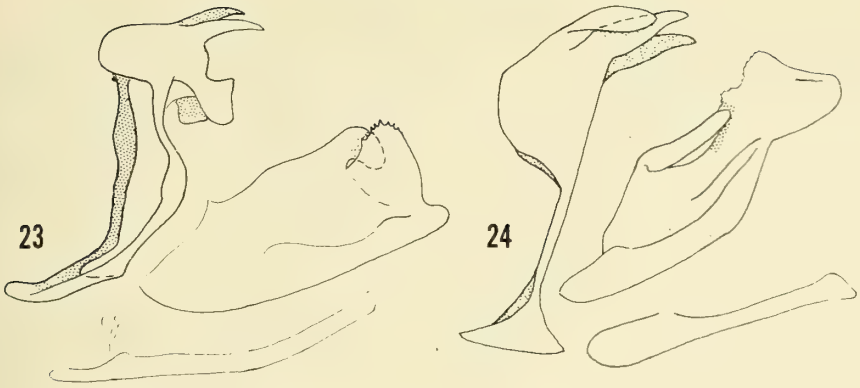
Of the five species included in *Calleagris,* one has been found in Liberia. The others are primarily South and East African, although *C. landbecki* (H. H. Druce, 1910b: 375 [Congo]) has been found as far west as Nigeria.

Calleagris lacteus (Mabille) (Fig. 23, ♂ genitalia)

Tagiades lacteus Mabille, 1877a: 39 (Congo).
=*Tagiades dannatti* Ehrmann, 1893: 309 (Liberia).

Holland (1894b: pl. 3, fig. 1) figures the type of *dannatti* (a ♀, not a ♂ as cited by Evans, 1937: 35), and states it is a synonym of *lacteus.* Comparison of the Ehrmann type in Carnegie Museum with Mabille's description supports Holland's opinion. Evans (1937: 35) considers *dannatti* a subspecies of *lacteus,* and describes it as follows, "On the forewing, above, the hyaline spots are much reduced and on the hindwing above the black spots are obsolete: both are prominent in *lacteus.*" Neither the Holland figure nor the Ehrmann type supports this description, and *dannatti* must be considered a pure synonym of *lacteus.*

Just what the entity Evans calls *"dannatti"* may be, is another problem. It is figured by Aurivillius (1925 [1908-1925]: pl. 76c) as *lacteus.* It may be a separate species, since the male genitalia bear little resemblance to Evans' figure (1937: pl. 10) of those of *lacteus,* but this discrepancy could be due to an error in drafting on his part. There are only two representatives of true *lacteus* in Carnegie Museum, both females, so the differences still could be sexual even though Evans cites males and females of both names. Without comparative material we hesitate to name this entity: it definitely does not represent a subspecies, since it is sympatric with true *lacteus,* at least in Liberia, but the decision as to whether it is a separate species or a dimorphic variant must await study of further material.



Figures 23-24, ♂ genitalia. Fig. 23, *Calleagris lacteus* (?), see text, Harbel, Liberia. Fig. 24, *Procampta rara,* Wanau Forest, Liberia.

A Liberian record of typical *lacteus* is: Liberia, West Africa, 1 ♀ (Naysmith), the type of *dannatti*. A specimen referable to the Evans definition of *dannatti* is: Harbel, 1 ♂, X (Fox).

There is one other specimen of typical *lacteus* from Uganda in Carnegie Museum.

Genus **PROCAMPTA** Holland

Procampta Holland, 1892b: 293. Type-species: *Procampta rara* Holland, by monotypy.

The single species of this genus occurs in Liberia.

Procampta rara Holland (Fig. 24, ♂ genitalia)

Procampta rara Holland, 1892b: 293 (Ogove).

This species, as the name implies, is not common, having been recorded from Sierra Leone and Ivory Coast to Gabon and the Congo.

A Liberian specimen, the first record: Wanau Forest, 1 ♂, X (Fox).

Other specimens in Carnegie Museum are from Cameroon and Gabon.

Genus **ERETIS** Mabille

Eretis Mabille, 1891: 71. Type-species: *Eretis melania* Mabille, by monotypy.

Ten species, most of which are East and South African, are as-

signed to this genus. One has been taken in Liberia, and the presence of another is expected. A third species, *E. plistonicus* (Plötz, 1879b: 362 [Aburi], as *Antigonus plistonicus*), has been taken in Ghana (Evans, 1937: 38) and may one day be found in our area.

Eretis lugens (Rogenhofer)

Pterygospidea lugens Rogenhofer, 1891: 462 (Marangu).
=*Pterygospidea morosa* Rogenhofer, 1891: 463 (Marangu).

According to Evans (1937: 38) this species is found from Sierra Leone and Guinea east to South Sudan and Kenya and south to Angola, but he mentioned no specific Liberian records.

The following may be the first records for Liberia: Zorzor, 2 ♀, XI, and Ganta, 1 ♂, XI (Fox).

There are also specimens from Uganda and Kenya in Carnegie Museum.

[**Eretis melania** Mabille]

Eretis melania Mabille, 1891: 71 (Gabon).
=*Sarangesa perpaupera* Holland, 1892b: 288 (Ogove).

This species, presently unrecorded from Liberia, almost certainly occurs there since Evans (1937: 39) cites specimens from Guinea, Sierra Leone, and Ghana in the long series in the British Museum collection, and Berger (1962: 450) mentions a specimen from Ivory Coast. The Carnegie Museum collection has series from Cameroon and Uganda in addition to a specimen labelled as the type of *perpaupera* and bearing a locality label citing Natal. There are several specimens in the Museum which bear highly suspect "Natal" labels and Evans cites no South African *melania*. Holland's original description of *perpaupera*, however, expressly states the specimen came from Ogove, Gabon, and the Holland type agrees in all respects with his description, so it was undoubtedly taken in Gabon.

Genus **SARANGESA** Moore

Sarangesa Moore, 1881 [1880-1881]: 176. Type-species: *Sarangesa albicilia* Moore, by original designation.
=*Hyda* Mabille, 1889: 183. Type-species: *Hyda micacea* Mabille, by monotypy; preoccupied by *Hyda* Walker, 1854.
=*Sape* Mabille, 1891: 67. Type-species: *Sape lucidella* Mabille, designated by Watson, 1893: 48.

=*Tabraca* Holland, 1896: 10 (Mabille ms.). Type-species: *Sarangesa albimargo* Holland, by monotypy.
=*Ulva* Lindsey, 1925: 105. Proposed to replace *Hyda* Mabille.

Twenty-three African species are members of this genus, which is also represented in the Indo-Australian fauna; four of the African species have been recorded from Liberia and an additional four species should be expected. As demonstrated by Evans (1937: 40) the genus is quite heterogeneous, and perhaps several genera, or at least species-groups, may be included in it. There is insufficient material at hand to undertake a revision of *Sarangesa* at present. Many names have been proposed in this genus since the species are very sensitive to environmental variations.

[**Sarangesa laelius** (Mabille)]

Pterygospidea laelius Mabille, 1877c: 240 (Gabon).
=*Apaustus synestalmenus* Karsch, 1893: 263; pl. 6, fig. 8 (Togo).
=*Sarangesa tristis* Rebel, 1914: 269 (Usambara).
=*Sarangesa laelioides* Riley, 1921: 253; pl. 7, fig. 14 (N. W. Rhodesia).
=*Sarangesa coelius* deFleury, 1926: 155 (Guinea); misprint for *laelius*.

Evans (1937: 42) retains *"laelius"*, *"tristis"*, and *"laelioides"* as form names, recording the first from western Africa. *S. laelius* is known from Senegal to Cameroon east to Abyssinia, Tanganyika, and and Northern Rhodesia, but it has not been definitely reported from our area, though it undobutedly occurs there. There are specimens of typical *laelius* from Kenya and Nyasaland in Carnegie Museum.

[**Sarangesa phidyle** (Walker)]

Cyclopides phidyle Walker, 1870: 56 (Hor Tamanib).
=*Sarangesa eliminata* Holland, 1896: 9; pl. 5, fig. 9 (Abyssinia).
=*Sarangesa eliminata deserticola* Rebel, 1907: 75 (S. Arabia).
=*Sarangesa phidyle* from *varia* Evans, 1937: 43 (Agageh Wells, W. Kordofan).

S. phidyle is recorded by Evans (1937: 43) from Senegal, Gambia, Sierra Leone, and Nigeria in a range that includes most of Africa, but it is not included in known Liberian collections. It should be sought in savanna areas of that country, as well as those of other countries from which it is unrecorded. The Carnegie Museum collection has specimens from Angola, Uganda, Kenya and a single specimen labelled as the type of *eliminata* from "Natal". This locality designa-

tion was assigned by someone other than Holland, and since the specimen fits the description of *eliminata*, it is almost certainly the Holland type from Abyssinia.

Sarangesa tertullianus (Fabricius) (Fig. 25, ♂ genitalia)

Hesperia tertullianus Fabricius, 1793 [1793-1794] (1): 341 ("Indiis").
=*Pterygospidea grisea* Hewitson, 1878: 344 (Gabon).
=*Hyda micacea* Mabille, 1889: 183 (Morovia).
=*Sarangesa micacea* aberration *"unipuncta"* Strand, 1912c: 44 (Cameroon).

Evans (1946: 644) resurrected the Fabrician name *tertullianus* and applied it to this insect, which had been known as *grisea* for better than half a century. We are following his lead with strong reservations, chiefly because Berger (1962: 450) also uses *tertullianus*. Our hesitation is based in part on Fabricius' type locality, the always vague "Indiis", and in part on the original description which could as easily be placed as one of the neotropical hesperiids (especially of the genus *Staphylus*) as the present species. It appears that an appeal for the suppression of *tertullianus* may be in order.

Evans (1937: 46, as *grisea*) records this species from Guinea to Gabon and the Congo. It is apparently abundant throughout its range and is one of the more frequently cited species in small regional lists.

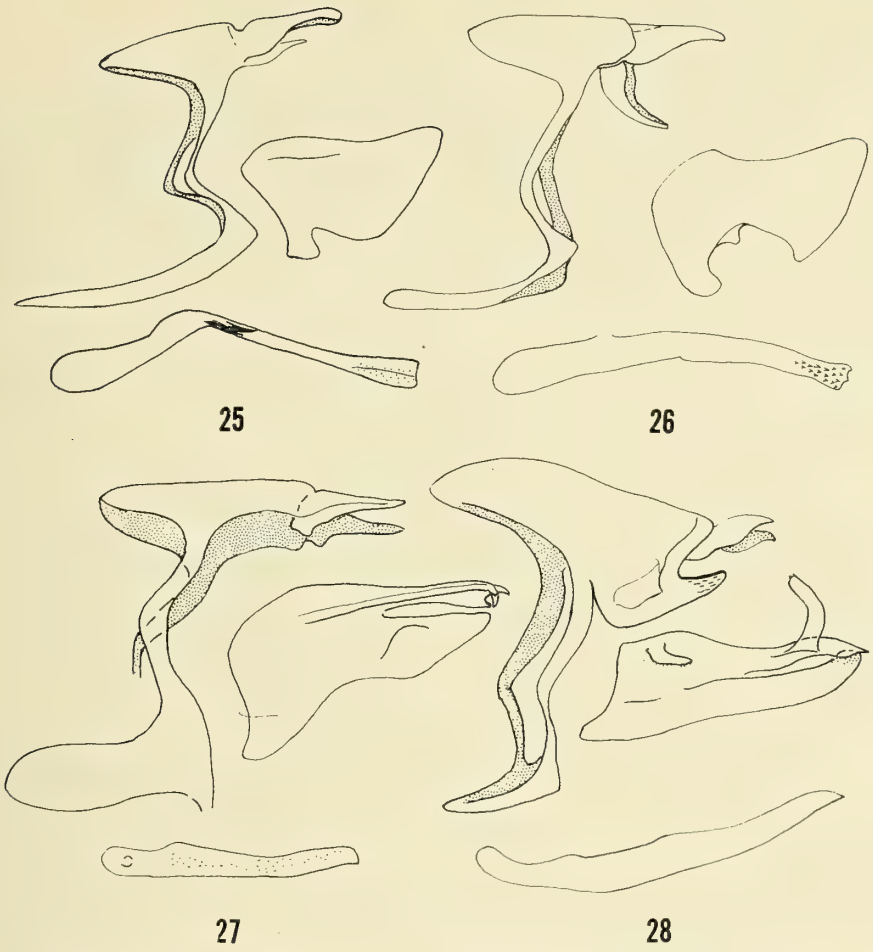
Liberia: Maloubli, 1 ♂, IV; Pata, 1 ♂, XI (Picard, 1950: 626); Harbel, 1 ♂, 1 ♀, III, 1 ♀, X; Ganta, 1 ♀, III, 2 ♂, 1 ♀, VII, 1 ♂, IX; Wanau Forest 1 ♂, II, 1 ♂, III; and Yendamalahoun, 2 ♀, IV (all Fox).

In addition to these specimens there are examples in Carnegie Museum from Cameroon and Gabon.

Sarangesa majorella (Mabille) (Fig. 26, ♂ genitalia)

Hyda majorella Mabille, 1891: 107 (Sierra Leone).
=*Sarangesa exprompta* Holland, 1894a: 26; pl. 1, fig. 3 (Accra).

In Evans' (1937: 41) key to the species of Sarangesa it is difficult to separate worn specimens of *majorella* from those of the last species. A better character is the configuration of the hyaline spot in space Cu_1-Cu_2 of the forewing, which is subquadrate in this species and greatly narrowed laterally in *tertullianus*. This alone will serve to separate the two species.



Figures 25-28, ♂ genitalia. Fig. 25, *Sarangesa tertullianus,* Wanau Forest, Liberia. Fig. 26, *S. majorella,* Harbel, Liberia. Fig. 27, *S. thecla,* Zorzor, Liberia. Fig. 28, *S. bouvieri,* Wanau Forest, Liberia.

Evans (1937: 46) records *majorella* from Sierra Leone to Cameroon, and Berger (1962: 450) lists examples from Ivory Coast. It does not appear to be a common butterfly.

Liberian records, perhaps the first for the country, are: Harbel, 1 ♂, XI; Zorzor, 3 ♂, XI, 1 ♂, XII; and trail near Fisabu, 1 ♀, VI (all Fox).

The only other specimen in Carnegie Museum is the type of *exprompta* from Ghana.

[**Sarangesa tricerata tricerata** (Mabille)]

Hyda tricerata Mabille, 1891: 106 (Sierra Leone).

The nominate subspecies has a wide range throughout the Guinean Subregion. Evans (1937: 47) recorded it from Gambia, Sierra Leone, and Ghana, and the collection of Carnegie Museum has specimens from Cameroon, Gabon, and the Congo. The subspecies *compacta* Evans (1951: 1269) is from Tanganyika. There are no records from Liberia, but this butterfly should be expected there. It does not seem to be common.

Sarangesa thecla thecla (Plötz) (Fig. 27, ♂ genitalia)

Antigonus thecla Plötz, 1879b: 361 (Aburi).
=*Sape semialba* Mabille, 1891: 67 (W. Africa).

The nominate subspecies is found from Sierra Leone to Gabon and east into Kenya. Evans (1955: 882) named *t. mabira* from Mabira Forest, Uganda, and it represents an apparently isolated subspecies. We have seen no examples of it.

Liberia: Maloubli, 1 ♂, IV (Picard, 1950: 626); Zorzor, 1 ♂, XI; trail near Fisabu, 2 ♂, XII; Ganta, 1 ♀, VIII; Yendamalahoun, 1 ♂, IV (Fox).

There are also specimens from Cameroon and Rio Muni in Carnegie Museum.

Sarangesa bouvieri (Mabille) (Fig. 28, ♂ genitalia)

Pterygospidea bouvieri Mabille, 1877c: 239 (Gabon).
=*Antigonus philotimus* Plötz, 1879b: 361 (Aburi).

Evans' placement (1937: 47) of *motozioides* Holland (1892b: 288 [Ogove]) as a synonym of *bouvieri* was apparently unjustified. Contrary to Evans' citation in the synonymy, *motozioides* was described from two females which differ markedly from those of *bouvieri*, as follows: the hyaline spots in space Cu_1-Cu_2 of the forewings are much larger than in the female of *bouvieri* and are subtriangular to subquadrate, the hindwings are much more mottled on the upper surface in *motozioides*, and the brown discal and extradiscal markings of the hindwing under surface are larger and much more prominent in *motozioides*. On the basis of such marked differences it seems advisable

to consider *motozioides* a separate species, at least until better knowledge is available.

Berger (1962: 451) records *bouvieri* from Ivory Coast, and Evans (1937: 47) reports it from Ghana to Angola east to Uganda.

Apparently the first Liberian records are: Wanau Forest, 1 ♂, VI, 1 ♂, X; and Yendamalahoun, 1 ♀, IV (Fox).

There are also specimens in Carnegie Museum from Cameroon, Gabon, and Uganda.

[**Sarangesa brigida brigida** (Plötz)]

Antigonus brigida Plötz, 1879b: 361 (Cameroon).
=*Antigonus brigidella* Plötz, 1886: 111 (Njam Njam).
=*Sarangesa aurimargo* Holland, 1896: 10; pl. 4, fig. 8 (Gabon) (Mabille ms.).

Typical *brigida* is recorded from Sierra Leone to Cameroon (Evans, 1937: 47-48) and Gabon (Holland, 1896: 10). The subspecies *atra* Evans (1937: 48) is East African. There are no Liberian records, but the species should be sought there. The specimens of *b. brigida* in Carnegie Museum are from Cameroon.

Genus **CAPRONA** Wallengren

Caprona Wallengren, 1857: 51. Type-species: *Caprona pillaana* Wallengren, by monotypy.
=*Abaratha* Moore, 1881 [1880-1881]: 181. Type-species: *Pterygospidea ransonnettii* Felder, by original designation.
=*Stethotrix* Mabille, 1889: 184. Type-species: *Stethotrix heterogyna* Mabille, by monotypy.

The present genus, also represented in the Asian fauna, contains two African species, one of which may occur in Liberia.

[**Caprona adelica adelica** Karsch]

Caprona adelica Karsch, 1892b: 241 (Togo).

This savanna species is listed as a possible member of the Liberian fauna, since it has been taken in Guinea and Nigeria. We have seen no specimens.

Genus **ABANTIS** Hopffer

Abantis Hopffer, 1855: 643. Type-species: *Abantis tettensis* Hopffer, by monotypy.
=*Sapaea* Plötz, 1879a: 177. Type-species: *Leucochitonea bicolor* Trimen, by original designation.

=*Abantiades* Fairmaire, 1894: 394. Proposed to replace *Abantis,* incorrectly believed to be preoccupied.

None of the fourteen species has been recorded from Guinea or Ivory Coast (Berger: 1962) or from Liberia, but two species may be members of the Liberian fauna. A third species, *A. nigeriana* Butler (1901b: 59) has been recorded from Senegal (Condamin, 1956: 198). This skipper might be found in Liberia.

[**Abantis leucogaster** (Mabille)]

Sapaea leucogaster Mabille, 1890a: 32 (Sierra Leone).

This species may be expected in Liberia since Evans (1937: 53) records it from Sierra Leone, Nigeria, and Cameroon. There are no specimens of this apparently rare skipper in Carnegie Museum.

[**Abantis venosa elegantula** (Mabille)]

Sapaea elegantula Mabille, 1890a: 32 (Sierra Leone).

Described from Sierra Leone and recorded by Evans (1937: 55) from Guinea, Ghana, and Nigeria, *elegantula* should be sought in the driest portions of Liberia. In Carnegie Museum there are specimens from Cameroon that are assigned to this subspecies.

Genus **SPIALIA** Swinhoe

Spialia Swinhoe, 1912: 99. Type-species: *Hesperia galba* Fabricius, by original designation.

Spialia, formerly considered a section of *Pyrgus* Hübner (*Hesperia* of authors), is represented in the European, Asian, and African faunal regions. Of the twenty-one African species only one has definitely been recorded from Liberia, but another three almost certainly occur there. The majority of the species of *Spialia* are East and South African and all but one species are predominantly savanna dwellers.

Higgins (1924) has thoroughly reviewed the African *Spialia.*

Spialia ploetzi (Aurivillius) (Fig. 29, ♂ genitalia)

Hesperia ploetzi Aurivillius, 1891: 227 (Cameroon).

It is interesting to note that *ploetzi* is apparently the only *Spialia* that is not a savanna species, all the records being from forests. Evans

(1937: 60) records it from Sierra Leone to Nigeria and east into the Congo, and there is a single male in Carnegie Museum from southern Cameroon.

The available Liberian records are: Liberia, 1 ♂ (Good); Bigtown, 1 ♂ (Naysmith); Maloubli, 2 ♂, IV; Penoke, 1 ♂, IV (both Picard, 1950: 626); Harbel, 1 ♂, V; Zorzor, 1 ♂, 1 ♀, XI; Kpain, 1 ♀, V; and Ganta, 1 ♂, IV, 1 ♂, VII (all Fox).

[**Spialia dromus** (Plötz)]

Pyrgus dromus Plötz, 1884f: 6 (Congo).
=*Pyrgus zaira* Plötz, 1884f: 6 (Congo).
=*Syrichtus melaleuca* Oberthür, 1912: 112 (Tanganyika).
=*Syrichtus leucomelas* Oberthür, 1912: 118 (Tanganyika).
=*Hesperia dromus elongata* Higgins, 1924: 95 (Kenya).
=*Hesperia dromus meridionalis* Higgins, 1924: 95 (Zanzibar).

This species, so far unreported from Liberia, has been recorded from practically all of Africa south of the Sahara, so its presence in this area is almost assured. It is apparently most common in the savannas. There are specimens in Carnegie Museum from Senegal, Congo, Uganda, Kenya, Nyasaland, Transvaal and Natal.

[**Spialia diomus diomus** (Hopffer)]

Pyrgus diomus Hopffer, 1855: 643 (Mozambique).
=*Syrichtus ferax* Wallengren, 1863: 137 (Kuislip River, South Africa).

Evans (1937: 61-62) recognizes two subspecies, *d. diomus* and *d. ferax,* the former to be expected in Liberia since he records it from Senegal, Guinea and Nigeria. *S. diomus* is a savanna butterfly. It is intriguing that Evans uses *diomus* as the name for the northern material and uses *ferax* for all the British Museum material from Mozambique, the type of locality of *diomus.* We have not seen the types, or figures of them, of either *diomus* or *ferax,* but it appears that the correct name for the northern material may prove to be *machacoana* (Butler, 1899b: 426; pl. 25, fig. 6 [Kenya], as *Pyrgus machacoana*), unless there is evidence that Hopffer's type was mislabelled geographically.

[**Spialia spio** (Linnaeus)]

Papilio spio Linné, 1767: 796 (Cape of Good Hope).

=*Papilio vindex* Stoll, 1781 [1775-1791], 4: 122; pl. 353, figs. G, H (Cape of Good Hope).

Although this species has not been recorded from Liberia, it is to be expected there since Berger (1962: 451) records it from Ivory Coast, and Evans (1937: 62) mentions specimens from "Guinea to Angola" among material from practically all of Africa south of the Sahara. In the Carnegie Museum series there are specimens from Cameroon, Gabon, Angola, Congo, Uganda, Kenya and South Africa.

Genus **GOMALIA** Moore

Gomalia Moore, 1879: 144. Type-species: *Gomalia albofasciata* Moore, by monotypy.

This genus, which is better represented in the Indo-Australian fauna, contains a single African species which has not yet been recorded from Liberia but almost certainly occurs there.

[**Gomalia elma** (Trimen)]

Pyrgus elma Trimen, 1862a: 288 (Plettenberg, South Africa).

Evans (1937: 63-64) lists specimens of *elma* from nearly all of Africa south of the Sahara, but he does not definitely record it from Liberia, although he may have had Liberian material before him: he reports, "32 ♂ 18 ♀ W. Africa (Senegal to Angola)". Certainly *elma* should be a resident of Liberia, probably flying in the interior. There are specimens in Carnegie Museum from Angola, Uganda, Kenya and South Africa.

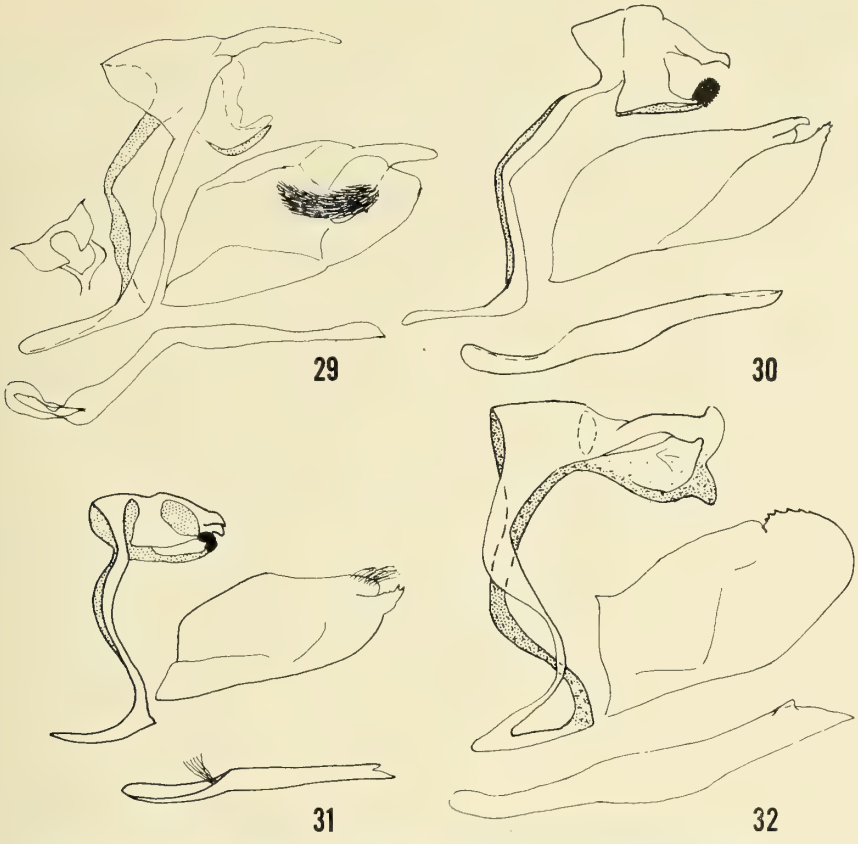
Subfamily HESPERIINAE

The remainder of the Liberian species fall into this subfamily, by far the largest of the African hesperiid fauna. Of the fifty-one genera recognized at present, thirty-four are represented in the Liberian fauna, or members of them are expected to occur there.

Genus **ASTICTOPTERUS** C. and R. Felder

Astictopterus C. and R. Felder, 1860b: 401. Type-species: *Astictopterus jama* C. and R. Felder, designated by Butler, 1870: 95.

This genus contains six African species, including the four removed from *Isoteinon* by Evans (1946: 644), two of which occur in Liberia.



Figures 29-32, ♂ genitalia. Fig. 29, *Spialia ploetzi,* Harbel, Liberia. Fig. 30, *Astictopterus anomaeus,* Ganta, Liberia. Fig. 31, *A. abjecta,* Zorzor, Liberia. Fig. 32, *Prosopalpus debilis,* Ganta, Liberia.

Astictopterus anomaeus (Plötz) (Fig. 30, ♂ genitalia)

Apaustus anomaeus Plötz, 1879b: 358 (Aburi).

Evans' representation (1937: pl. 16) of the male genitalia is somewhat misleading, as may be seen by comparison with our figure, since the uncus is much shorter than he shows it to be. Evans (1937: 77) records this species from Sierra Leone to Ghana, and Berger (1962: 451) mentions specimens from two localities in Ivory Coast.

Liberian records, apparently the first for the country and the only specimens in Carnegie Museum, are: Ganta, 1 ♂, 1 ♀, VI (Fox).

Astictopterus abjecta (Snellen) (Fig. 31, ♂ genitalia)

Cyclopides abjecta Snellen, 1872: 32; pl. 2, figs. 15, 16 (Mouth of the Congo River).
=*Seropes furvus* Mabille, 1889: 156 (Sierra Leone).
=*Cyclopides uniformis* Karsch, 1893: 245 (Bismarckburg, Togo).
=*Leptalina niangarensis* Holland, 1920: 256; pl. 12, fig. 3 (Niangara, Congo).

A. abjecta is recorded by Evans (1937: 78) from Sierra Leone and Ivory Coast to Angola and the Congo, and Berger (1962: 451) lists a specimen taken in Guinea. It does not appear to be a common species.

The first record from Liberia is Zorzor, 1 ♂, XI (Fox).

The only other representative of this species in Carnegie Museum is a paratype of *Leptalina niangarensis* from the type locality.

Genus **PROSOPALPUS** Holland

Prosopalpus Holland, 1896: 53. Type-species: *Cobalus duplex* Mabille (=*debilis*) by original designation.

All three species assigned to *Prosopalpus* may be found in Liberia, although only one has been recorded to date.

Prosopalpus debilis (Plötz) (Fig. 32, ♂ genitalia)

Apaustus debilis Plötz, 1879b: 360 (Mungo, Guinea).
=*Cobalus duplex* Mabille, 1889: 169 (Freetown, Sierra Leone).

Evans (1937: 80) records this species from Sierra Leone, Ghana, and Cameroon, and it was described from Guinea.

Twelve Liberian specimens, representing the first records for that country, are: Harbel, 1 ♀, I; Zorzor, 1 ♀, XI; Ganta, 1 ♂, 2 ♀, VI, 4 ♂, 1 ♀, VII, 1 ♀, VIII, 1 ♂, X; Wanau Forest, 1 ♂, 1 ♀, III (all Fox).

In addition to these specimens there is a lone representative from Gabon (Ogove River), which appears to be a new record for that country.

[**Prosopalpus styla** Evans]

Prosopalpus styla Evans, 1937: 81; pl. 3, fig. 37 (South Sudan).

In his type series Evans included specimens from Sierra Leone and Nigeria, and Berger (1962: 451) records it from Bingerville, Ivory

Coast, suggesting strongly that *styla* will be found in Liberia. Carnegie Museum collection has specimens from Cameroon, including one that bears a note to the effect that it is found in swamps. The pattern of its distribution suggests that if the above note was accurate *styla* probably primarily inhabits savanna swamps.

[**Prosopalpus saga** Evans]

Prosopalpus saga Evans, 1937: 81; pl. 3, fig. 38 (W. Ankole, Uganda).

Described from Uganda and Cameroon, *saga* must be included as a possible Liberian skipper on the basis of a record from neighboring Guinea (Berger, 1962: 452). It is probably a savanna species. The specimen recorded by Berger was taken on *Lantana* flowers.

Genus **KEDESTES** Watson

Kedestes Watson, 1893: 96. Type-species: *Hesperia lepenula* Wallengren, by original designation.

The majority of the fourteen species belonging to the present genus are South and East African and none has been recorded from Liberia, though one species may be expected there.

[**Kedestes paola protensa** Butler]

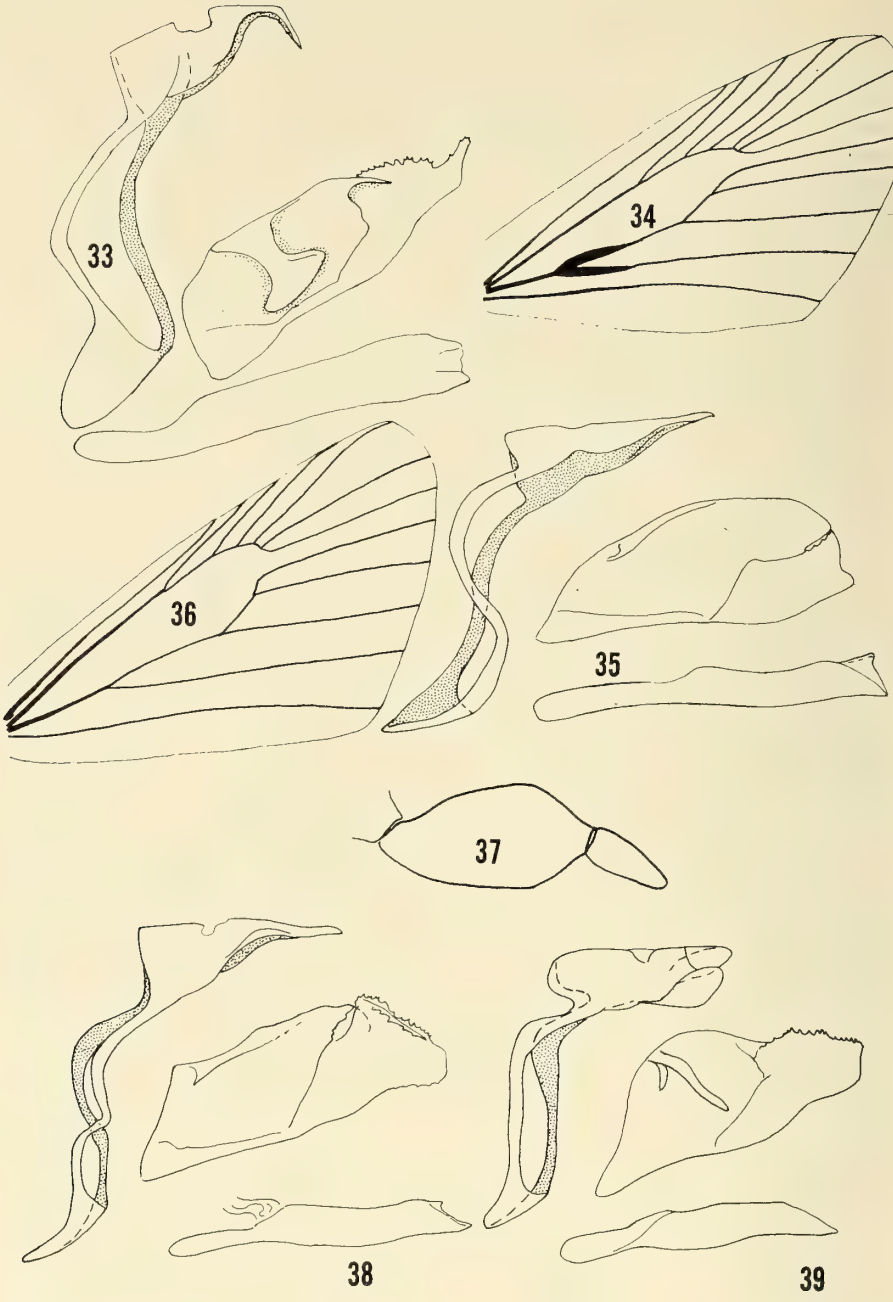
Kedestes protensa Butler, 1901b: 60 (N. Nigeria).
=*Kedestes chacoides* Gaede, 1916: 126 (Busamtare, New Cameroon).

K. p. protensa is recorded by Evans (1937: 84) from Sierra Leone to Uganda and south to Cameroon, suggesting it may be Liberian, though thus far unrecorded; the nominate subspecies is found south of this range. The butterfly is probably a savanna species and should be sought in suitable localities in Liberia.

Genus **GORGYRA** Holland

Gorgyra Holland, 1896: 31. Type-species: *Apaustus aburae* Plötz, by original designation.
=*Oedaloneura* Mabille, 1904: 101. Type-species: *Pamphila heterochrus* Mabille, by monotypy.

There are nineteen species assigned to *Gorgyra,* eleven of which have been recorded from Liberia and a twelfth species is expected to be found there. Since *Gorgyra* is so well represented in the Liberian collections, it is rather strange to note, in so many reports, collections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which lack these skippers entirely, or have just one or two representatives.

The members of the genus are divided into species groups on the basis of the male secondary sexual characteristics.

The **aretina** group

These skippers are characterized by the presence of abdominal brushes in the male, and the forewings of both sexes are more rounded at the apices than in the other groups. One of the two species in the group is found in Liberia.

Gorgyra aretina (Hewitson) (Fig. 33, ♂ genitalia)

Ceratrichia aretina Hewitson, 1878: 343 (Calabar).
=*Apaustus dolus* Plötz, 1879b: 358 (Aboe, Guinea).
=*Gastrochaeta albiventris* Holland, 1896: 35 (ms. name in Staudinger Collection).
=*Gorgyra aretina aretinodes* Strand, 1912c: 48 (Cameroon).

Judging by the records, *aretina* seems to be one of the less rare members of *Gorgyra,* being recorded from Guinea to Cameroon and east to Kenya.

Liberia: Liberia, W. Africa, 1 ♂ (A. C. Good); Zorzor, 1 ♀, XI (Fox).

There are other specimens in Carnegie Museum from Cameroon and Uganda.

The **aburae** group

Members of this group are characterized by the radiating hair tuft on the upper surface of the hindwing in space 1A-2A of the male. Four of the species are found in Liberia.

Gorgyra heterochrus (Mabille) (Figs. 34, ♂ forewing, 35, ♂ genitalia)

Pamphila heterochrus Mabille, 1890a: 31 (named without description; erroneously cited earlier reference); pl. 3, fig. 7 (Sierra Leone).

This species may be readily distinguished from all other *Gorgyra* by

Figures 33-39. Fig. 33, *Gorgyra aretina,* ♂ genitalia, Liberia. Fig. 34, *G. heterochrus,* ♂ forewing, Wanau Forest, Liberia. Fig. 35, ♂ genitalia of specimen in Fig. 34. Fig. 36, *G. aburae,* ♂ forewing, Harbel, Liberia. Fig. 37, palpus of specimen in Fig. 36 (compare with palpus of *Gyrogra,* Fig. 48). Fig. 38, ♂ genitalia of specimen in Fig. 36. Fig. 39, *G. mocquerysii,* ♂ genitalia, Harbel, Liberia.

the thickened base of vein Cu_2 and the adjacent cubital stem on the male forewing, as shown in the figure. Evans (1937: 93) cites specimens of this uncommon skipper from Sierra Leone, Ivory Coast, and Cameroon, and there is a specimen in Carnegie Museum from the last country.

Liberia (apparently the first records): Zorzor, 1 ♂, XI; Ganta, 2 ♂, VII, 1 ♂, VIII, 1 ♂, XII; and Wanau Forest, 2 ♂, III, 1 ♂, V, 1 ♂, VII, 1 ♂, X (Fox).

Gorgyra aburae (Plötz) (Figs. 36, ♂ forewing, 37, palpus, 38, ♂ genitalia)

Apaustus aburae Plötz, 1879b: 359 (Aburi).

The male forewing is shown as typical of the genus *Gorgyra* in contrast with that of *heterochrus*. *G. aburae*, apparently a rare butterfly, has been recorded from the type locality, Sierra Leone, and Cameroon (Evans, 1937: 93).

A single Liberian specimen is the first record: Harbel, 1 ♂, V (Fox).

Gorgyra mocquerysii Holland (Fig. 39, ♂ genitalia)

Gorgyra mocquerysii Holland, 1896: 33; pl. 5, fig. 10 (French Congo).

With respect to its genitalia *mocquerysii* is the most distinctive member of the genus; the foreshortened uncus cannot be confused. It was recorded by Evans (1937: 93) from Sierra Leone, Cameroon, Angola and Uganda; Berger (1962: 452) reported a specimen from Ivory Coast.

Liberian records: Liberia, W. Africa, 1 ♂ (Naysmith); Harbel, 1 ♂, III (Fox).

There is one other specimen in Carnegie Museum from Gabon.

Gorgyra bina Evans (Fig. 40, ♂ genitalia)

Gorgyra bina Evans, 1937: 93; pl. 3, fig. 45 (Bitje, Cameroon).

G. bina, which appears to be common, was described from Sierra Leone, Nigeria, Cameroon, Congo, and Uganda. There are specimens in Carnegie Museum from Cameroon and Gabon, the latter apparently a new record.

The first definite Liberian records are: Zorzor, 1 ♂, XI; Ganta, 1 ♂, VII (Fox).

The **subfacatus** group

None of these species displays any secondary sexual characteristics. Six members of the group occur in Liberia, and a seventh probably will be found there.

Gorgyra sola Evans (Fig. 41, ♂ genitalia)

Gorgyra sola Evans, 1937: 92; pl. 3, fig. 44 (Sierra Leone).

This species was previously known only from the type specimen. A female from Gabon in the collection of Carnegie Museum indicates this rare hesperiid is probably widely spread throughout the Guinean Subregion.

Liberia (the first record): Harbel, 1 ♂, III (Fox).

[**Gorgyra afikpo** H. H. Druce]

Gorgyra afikpo H. H. Druce, 1909: 411; pl. 67, fig. 6 (Afikpo, N. Nigeria).

Recorded from Sierra Leone, Ivory Coast, Nigeria, Cameroon, and Uganda (Evans, 1937: 93), *afikpo* may be expected in Liberia but has not yet been reported. There are specimens in Carnegie Museum from Cameroon. The ornate valvae of the male genitalia and the configuration of the structures associated with the uncus are distinctive in this species, and are well shown by Evans (1937: pl. 18).

Gorgyra diversata Holland (Fig. 42, ♂ genitalia)

Gorgyra aburae diversata Holland, 1896: 32 (Ogove).

Evidently *diversata* ranges down the West African coastline from Sierra Leone to Angola (Evans, 1937: 94).

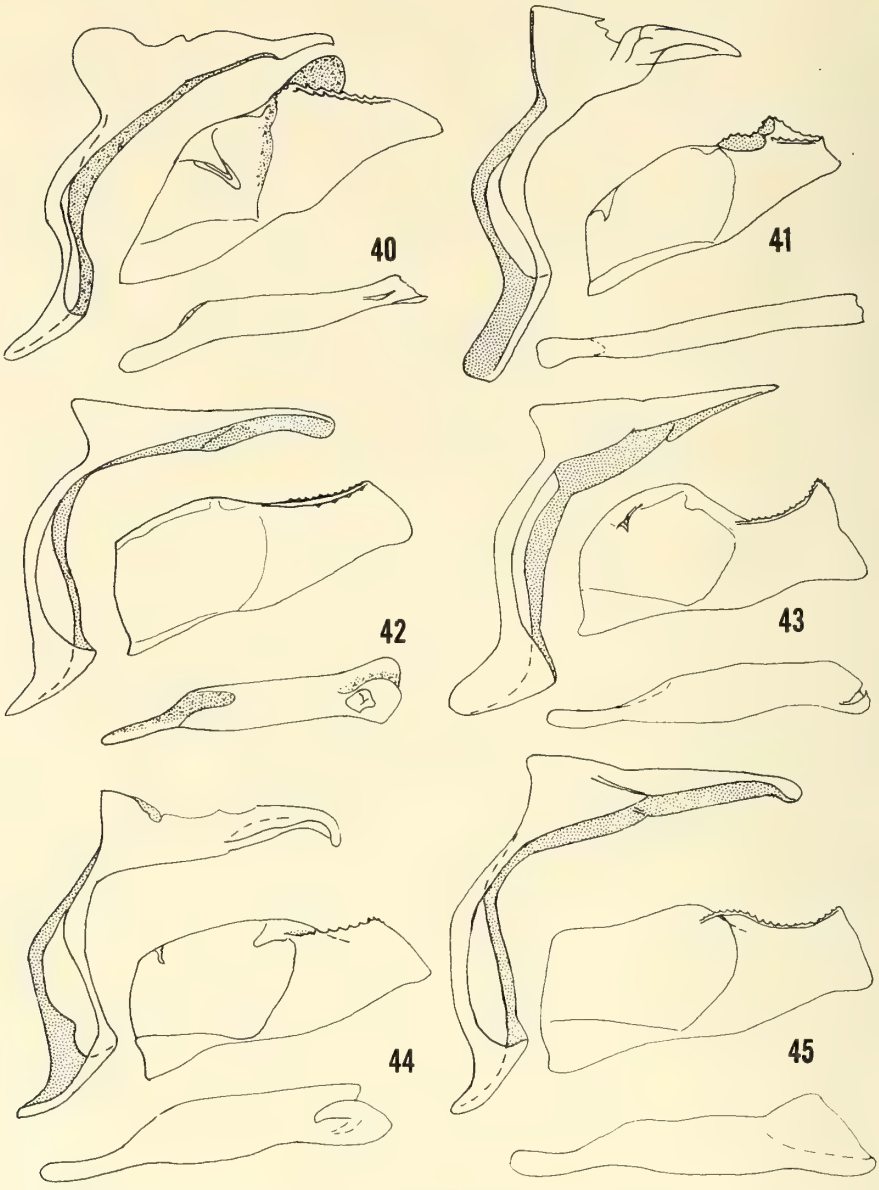
The first Liberian record is: Ganta, 1 ♂, VII (Fox).

There are also specimens from Cameroon and Gabon in Carnegie Museum.

Gorgyra minima Holland (Fig. 43, ♂ genitalia)

Gorgyra minima Holland, 1896: 33; pl. 4, fig. 24 (French Congo).

G. minima may well prove to be the Guinean subspecies of *johnstoni* (Butler, 1893: 673, assigned to *Aeromachus* [?]) which is very common in parts of East Africa. There are, however, consistent dif-



Figures 40-45, ♂ genitalia. Fig. 40, *Gorgyra bina,* Ganta, Liberia. Fig. 41, *G. sola,* Harbel, Liberia. Fig. 42, *G. diversata,* Batanga, Cameroon. Fig. 43, *G. minima,* Cape Palmas, Liberia. Fig. 44, *G. sara,* Ganta, Liberia. Fig. 45, *G. subfacatus,* Liberia.

ferences, both superficial and genitalic, which lead us to consider *minima* and *johnstoni* distinct though closely related species. The present species has been taken from Sierra Leone to Cameroon (Evans, 1937: 94) and is recorded from Ivory Coast by Berger (1962: 452).

Liberia: Liberia, W. Africa, 1 ♂ (Naysmith); Cape Palmas, 1 ♂ (A. I. Good).

There are also many specimens from Cameroon in Carnegie Museum, as well as some from the type locality, Gabon. Toward the southern part of its range *minima* seems to be more abundant.

Gorgyra sara Evans (Fig. 44, ♂ genitalia)

Gorgyra sara Evans, 1937: 95; pl. 4, fig. 50 (Sierra Leone).

Described from Sierra Leone, Ivory Coast, Nigeria (Lagos), and Cameroon, *sara* is represented in Carnegie Museum by specimens from Cameroon and Rio Muni, the latter a new record, in addition to the record which follows. It is apparently not uncommon.

A new record from Liberia is: Ganta, 1 ♂, VII (Fox).

Gorgyra subfacatus subfacatus (Mabille) (Fig. 45, ♂ genitalia)

Cobalus subfacatus Mabille, 1889: 168 (Sierra Leone).

G. s. subfacatus is the Occidental African of the two subspecies and is recorded from Sierra Leone, Ivory Coast, Ghana and Nigeria.

This is the first Liberian record: Bigtown, 1 ♂ (Naysmith).

Gorgyra pali Evans (Fig. 46, ♂ genitalia)

Gorgyra pali Evans, 1937: 95; pl. 4, fig. 51 (Bitje, Cameroon).

This species was described from Ghana, Nigeria, Cameroon, Congo and Uganda.

This Liberian record is the most northwesterly for the species: Ganta, 1 ♂, VI (Fox).

This specimen is so dark on the upper surface that the maculation of the primaries is almost obsolete. Whether this is merely an individual variation or a characteristic of the Liberian population cannot be decided from a single specimen. More material is badly needed to determine the systematic position of the Liberian population. There

are comparative specimens in Carnegie Museum from Cameroon and Uganda.

GYROGRA, new genus

Type-species: *Parnara* (?) *subnotata* Holland, 1894.

Antenna over half length of costa, as in *Gorgyra*, but differing in the following particulars: the club is thicker and is bent abruptly to the apiculus well beyond the middle while in *Gorgyra* the club is not so thick and is arcuate about the middle; the front of the shaft is not checkered in the present genus, and there is no white band encircling the middle of the club. The second joint of the palpus of *Gyrogra* is relatively shorter and the third joint is about one-third as long as the second and erect; in *Gorgyra* the second joint is relatively long and the third is about half as long as the second and porrect. The legs are as in Gorgyra. The chief difference in the venation between the two genera is in the origin of Cu_2 of the forewing: in *Gorgyra* it arises much nearer the origin of A than to that of Cu_1 and in the present genus it arises halfway between these two veins or slightly nearer Cu_1. The humeral vein of the hindwing of *Gyrogra* is rather well developed, projecting basad of the Sc-R stem. The pattern of the wings is reminiscent of that of *Gorgyra* but the extensive, clearly defined rufous discal patch of the hindwing above is distinctive and the pattern of the under surface is quite modified. The male genitalia are quite different from those of *Gorgyra* in the development of the falces (these are at most represented by flaps in *Gorgyra*) and the distinctive configuration of the valva, which is not approached by any member of the preceding genus.

This genus is placed here merely as a convenience, since the single species was considered a member of the genus *Gorgyra* by Evans (1937: 96). It is probably nearer *Platylesches* and *Meza*.

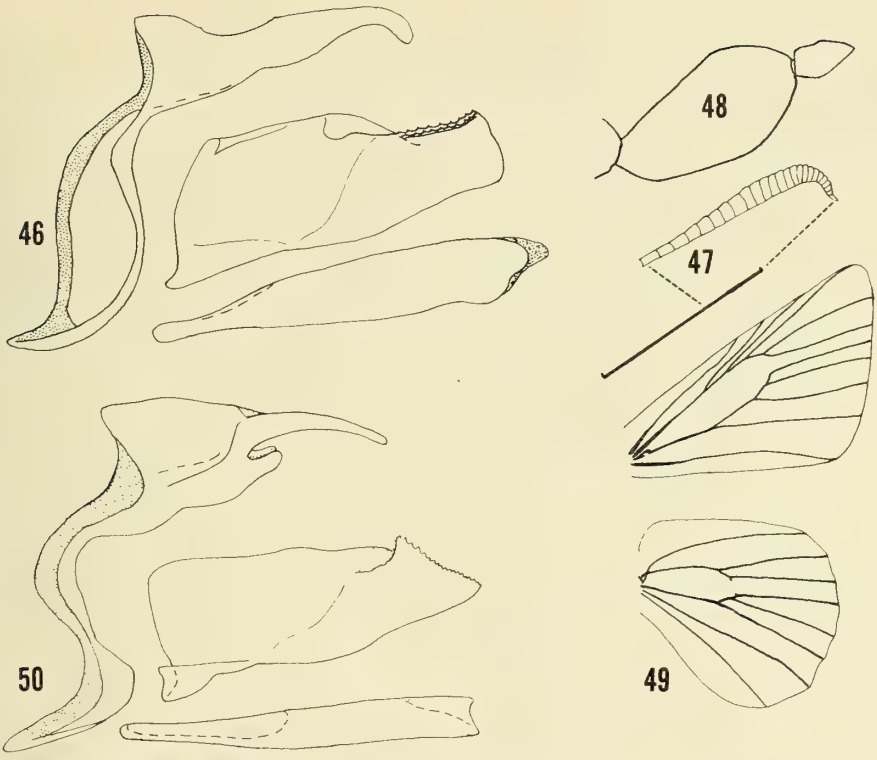
The single species probably occurs in Liberia.

[**Gyrogra subnotata** (Holland)]

(Figs. 47, antenna, 48, palpus, 49, ♂ wing venation, 50, ♂ genitalia)

Parnara (?) *subnotata* Holland, 1894b: 94; pl. 3, fig. 13 (no locality cited). *Baoris subnotata* Holland, 1896: 70. *Platylesches* (?) *subnotata* Aurivillius, 1925 [1908-1925]: 524; pl. 79c. *Gorgyra subnotata* Evans, 1937: 96.
=*Pamphila rufipuncta* Holland, 1896: 70 (Mabille ms.).

This species has not been recorded from Liberia, but it should occur there since Evans (1937: 96) mentions specimens in the British Museum collection from Sierra Leone, Ivory Coast, and Cameroon. There are specimens in Carnegie Museum from Cameroon, Gabon, and the Congo. Holland (1894b: 94) failed to cite a type locality for this species, but a specimen in Carnegie Museum from Ogove is labelled as type. Since this specimen matches the Holland description



Figures 46-50. Fig. 46, *Gorgyra pali,* Ganta, Liberia. Fig. 47, *Gyrogra,* new genus, antennal club, Bule County, [Cameroon] (Note: the line above the wing indicates the length of the antenna on the same scale as the wing; the dotted lines show that part of the antenna figured.) Fig. 48, palpus of specimen in Fig. 47. Fig. 49, wing venation of specimen in Fig. 47. Fig. 50, *G. subnotata,* ♂ genitalia, Efulen, Cameroon.

and figure it is undoubtedly the type, and the type locality is therefore Ogove.

Genus **TENIORHINUS** Holland

Teniorhinus Holland, 1892b: 292. Type-species: *Teniorhinus watsoni* Holland, by original designation.

=*Oxypalpus* Holland, 1892b: 293. Type-species: *Pamphila ignita* Mabille, by original designation.

Teinorhinus Watson, 1893: 78. Type-species: *Teniorhinus watsoni* Holland, by original designation.

Of the four species assigned to the present genus two are found in Liberia.

Teniorhinus watsoni Holland (Fig. 51, ♂ genitalia)

Teniorhinus watsoni Holland, 1892b: 292 (Gabon).
=*Oxypalpus niger* H. H. Druce, 1910b: 376; pl. 35, fig. 10 (Congo).

Evans (1937: 97) considered *niger* a subspecies of *watsoni,* which is impossible since the two fly together at Efulen, Cameroon without intergrades. This evidence suggests that either *niger* is a variant or a separate species, but the genitalia are inseparable from those of *watsoni.* No decision can be made concerning the status of *niger* without much more material and careful field observation where the two occur together. There are records of *watsoni* from Sierra Leone to Gabon and east to Uganda.

Liberia: Harbel, 1 ♀, I; Ganta, 1 ♂, 1 ♀, VI; Wanau Forest, 1 ♂, X (all Fox).

Comparative material in Carnegie Museum is from Cameroon, Rio Muni and Gabon.

Teniorhinus ignita (Mabille) (Fig. 52, ♂ genitalia)

Pamphila ignita Mabille, 1877a: 40 (Congo).
=*Hesperia pyrosa* Plötz, 1879b: 356 (Eningo).
=*Pamphila gisgon* Mabille, 1891: 172 (Ogove).
=*Oxypalpus wollastoni* Heron, 1909: 171; pl. 5, figs. 13, 14 (Ruwenzori).
=*Oxypalpus ignita alenica* Strand, 1912c: 50 (Alen, Cameroon).

P. ignita is recorded by Evans (1937: 97) from Sierra Leone to Gabon and east to Uganda and northeastern Rhodesia; there is comparative material in Carnegie Museum from Rio Muni and Gabon, in addition to the records which follow.

Liberia: Liberia, 1 ♂ (Evans, 1937: 97); Harbel, 1 ♀, I, 1 ♂, 1 ♀, II, 2 ♂, 2 ♀, III; St. Paul River at Zorzor Road, 1 ♂, V (all Fox).

Genus **CERATRICHIA** Butler

Ceratrichia Butler, 1869b: 274. Type-species: *Papilio nothus* Fabricius, by original designation.

Of the fourteen species included in this group four are definitely recorded from Liberia and a fifth probably occurs there.

Ceratrichia has been reviewed by Riley (1925a).

Ceratrichia phocion (Fabricius) (Fig. 53, ♂ genitalia)

Papilio phocion Fabricius, 1781: 138 ("Africa aequinoctiale").
=*Cyclopides phocaeus* Westwood and Hewitson, 1852 [1846-1852]: 521; proposed to replace *phocion* thought to be preoccupied.

This is a butterfly of the deep forests, being found in the few open patches of sunlight scattered along forest paths. It is one of the commonest African hesperiids throughout its range. Its association with forest clearings is especially stressed by Birket-Smith (1960b: 1271-1272). Mr. T. G. Howarth tells us (*in lit.*) that the Fabrician type of *phocion*, which is in the British Museum, is from Sierra Leone, so Liberian material is typical as contrasted with the larger and darker specimens from Cameroon, Rio Muni and Gabon. Evans (1937: 101) records *phocion* from Senegal to Gabon.

Liberia: Diyala, 2 ♂ (Picard, 1950: 626); Harbel, 1 ♀, I, 2 ♂, II, 1 ♂, IV, 2 ♂, V, 1 ♀, VIII, 1 ♂, IX, 6 ♂, 2 ♀, X, 5 ♂, XI, 1 ♂, XII; Fish Lake, 1 ♂, I, 1 ♂, XII; trail near Fisabu, 1 ♂, III, 2 ♂, 1 ♀, XII; Zorzor, 4 ♂, XI; Ganta, 5 ♂, II, 7 ♂, 2 ♀, V, 5 ♂, 1 ♀, VI, 3 ♂, 2 ♀, VII, 1 ♂, VIII, 1 ♂, IX; Wanau Forest, 1 ♂, V, 4 ♂, 1 ♀, X; Yendamalahoun, 1 ♂, IV (all Fox).

[**Ceratrichia hollandi clara** Riley]

Ceratrichia hollandi clara Riley, 1925a: 410 (Ghana).

Evans (1937: 101) records this subspecies from Guinea to Gabon, suggesting strongly that it occurs in Liberia though it is at present unrecorded from there. Specimens from Cameroon and Gabon are the only representatives of *clara* in Carnegie Museum.

Ceratrichia crowleyi Riley (Fig. 54, ♂ genitalia)

Ceratrichia crowleyi Riley, 1925a: 410 (Sierra Leone).

Evans (1937: 102) records this skipper from Sierra Leone only. It is apparently quite uncommon.

The first records of Liberian specimens (and the only ones in the collection of Carnegie Museum) are: Harbel, 1 ♂, X; Fish Lake, 1 ♂, XII; Wanau Forest, 1 ♂, X (Fox).

C. crowleyi is evidently widely distributed but rare throughout our area.

Ceratrichia nothus nothus (Fabricius) (Fig. 55, ♂ genitalia)

Papilio nothus Fabricius, 1787: 88 ("America").
=*Hypoleucis enantia* Karsch, 1893: 255 (Togo).

Of the two subspecies the nominate one is Occidental African, occurring from Sierra Leone to Togo (Evans, 1937: 102).

These are the first recorded Liberian specimens: Harbel, 1 ♂, 1 ♀, VI; Ganta, 3 ♂, 1 ♀, V, 6 ♂, 1 ♀, VI, 6 ♂, 4 ♀, VII, 2 ♂, 2 ♀, VIII (Fox).

Ceratrichia semilutea Mabille (Fig. 56, ♂ genitalia)

Ceratrichia semilutea Mabille, 1891: 65 (Lagos, Nigeria)
=*Ceratrichia indeterminabilis* Strand, 1912b: 110 (Cameroon).

C. semilutea is recorded from Guinea, Sierra Leone, and Ivory Coast to Uganda (Evans, 1937: 104) but not from our area.

A Liberian specimen represents the first record from that country: Harbel, 1 ♂, VIII (Fox).

There are also specimens in Carnegie Museum from Cameroon, Rio Muni and Gabon.

Genus **PARDALEODES** Butler

Pardaleodes Butler, 1870c: 96. Type-species: *Papilio edipus* Stoll, by monotypy.

Of the seven species attributed to the genus five are found in Liberia.

Pardaleodes incerta (Snellen)

Pamphila incerta Snellen, 1872: 29 (Mouth of the Congo River).
=*Hesperia murcia* Plötz, 1883: 229 (no locality cited).
=*Pardaleodes oedipus diluta* Robbe, 1892: 134 (Congo).

Evans (1937: 105) recognizes two subspecies, *incerta* and *murcia*, and lists the specimens of each in the British Museum collection. These "subspecies" have broadly overlapping ranges, specimens of each being recorded from Sierra Leone, Nigeria, Cameroon, Congo and South Sudan. The Liberian specimens are all assignable to *murcia*. It appears that Evans' "subspecies" are just the expression of an ill-defined cline with the "*murcia*" tendency showing its greatest de-

Figures 51-56, ♂ genitalia. Fig. 51, *Teniorhinus watsoni*, Ganta, Liberia. Fig. 52, *T. ignita*, St. Paul R. crossing at Zorzor Rd., Liberia. Fig. 53, *Ceratrichia phocion*, Ganta, Liberia. Fig. 54, *C. crowleyi*, Harbel, Liberia. Fig. 55, *C. n. nothus*, Ganta, Liberia. Fig. 56, *C. semilutea*, Harbel, Liberia.

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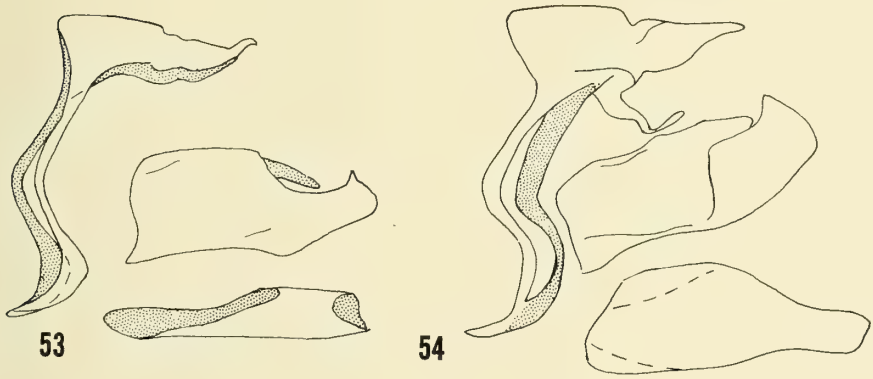
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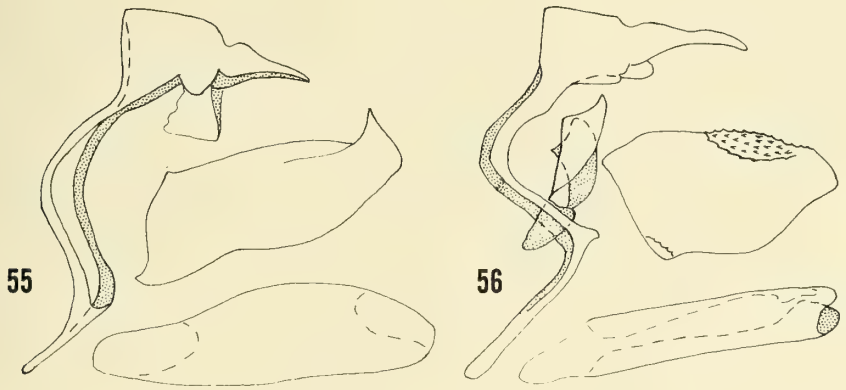
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velopment in the northern and western part of the range and the *"incerta"* tendency in the eastern and southern part. The designation of subspecies in *incerta* seems unnecessary and ill-advised; all specimens are better referred to *incerta* with no further subdivision.

P. incerta is reported from Guinea and Sierra Leone to Angola, South Sudan, Kenya and Tanganyika.

Liberia: Liberia, 1 ♂, 1 ♀ (Evans, 1937: 105); Kaouyeke, 1 ♂, III; Diyala, 1 ♂ (both Picard, 1950: 626).

This species is represented in the collection of Carnegie Museum by a large series from Cameroon, Gabon, Angola, Congo and Uganda.

Pardaleodes edipus (Stoll) (Fig. 57, ♂ genitalia)

Papilio edipus Stoll, 1781 [1775-1791], 4: 146; pl. 346; figs. E, F ("Cape of Good Hope").

Following Brown (1941: 128-130) the name *edipus* must be credited to Stoll, not Cramer as cited by most authors. Birket-Smith (1960b: 1271-1272, 1278) associates this skipper with the small sunny clearings of the forests and also mentions one specimen taken in a mangrove swamp near Douala, Cameroon. It is apparently one of the most abundant forest species of West Africa.

Evans (1937: 105) records this species from Gambia to Gabon and east into the Congo, and Berger (1962: 453) mentions a specimen taken at flowers of *Zinnia* at Macenta, Guinea among several records from that country and Ivory Coast.

Liberia: Taoke, 1 ♂, III (Picard, 1950: 626); Liberia, W. Africa, 2 ♂, 1 ♀; Cape Palmas, 1 ♀ (both Naysmith); Harbel, 1 ♂, 1 ♀, I, 1 ♂, 1 ♀, II, 1 ♀, V, 2 ♀, VIII, 1 ♂, 1 ♀, IX, 1 ♀, XI, 1 ♀, XII; Zorzor, 1 ♀, XI; Ganta, 1 ♀, II, 3 ♂, 3 ♀, VI, 3 ♂, 3 ♀, VII, 1 ♂, 1 ♀, VIII, 1 ♀, IX; Wanau Forest, 1 ♀, IX; Kpain, 1 ♂, V (all Fox).

There are also over 500 specimens in the Carnegie Museum collection from Ghana, Nigeria, Fernando Po, Cameroon, Rio Muni and Gabon.

Pardaleodes sator (Westwood and Hewitson) (Fig. 58, ♂ genitalia)

Cyclopides sator Westwood and Hewitson, 1852 [1846-1852]: 523; pl. 79, fig. 4 (Guinea).

=*Pardaleodes pusiella* Mabille, 1877c: 237 (Congo).

Evans (1937: 105-106) considers the two names listed in the synonymy as subspecies, basing his decision on the separation or non-separation of the forewing spot in space M_3-Cu_1 from the cell spot. He gives a geographic distribution of the two "subspecies" which is not supported by examination of the Carnegie Museum series, in which the spots mentioned above are separated in scattered individuals throughout all series from various localities including the Liberian material. It seems inadvisable, therefore, to utilize Evans' subspecific designation of *pusiella*. This species, like *incerta* and the next one, is quite variable without regard to geographic factors.

This species occurs from Guinea to Angola thence east through Uganda to Kenya.

Liberia: Liberia, W. Africa, 2 ♂, 3 ♀ (A. C. Good); Harbel, 1 ♀, I, 1 ♂, 1 ♀, II, 1 ♂, III, 1 ♀, V, 1 ♂, IX, 1 ♂, 1 ♀, X, 1 ♂, XI, 1 ♀, XII; trail near Fisabu, 1 ♂, XII; Zorzor, 1 ♂, XI; Ganta, 1 ♂, 1 ♀, V, 8 ♂, 6 ♀, VI, 4 ♂, 3 ♀, VII, 2 ♂, VIII, 2 ♂, 1 ♀, IX; Wanau Forest, 1 ♂, I, 1 ♂, II, 1 ♀, III, 1 ♂, VIII, 1 ♂, X; Yendamalahoun, 1 ♂, IV (all Fox).

In addition to the fifty-one Liberian specimens there are more than one hundred from Cameroon, Rio Muni, Gabon and Uganda in Carnegie Museum.

Pardaleodes tibullus (Fabricius) (Fig. 59, ♂ genitalia)

Hesperia tibullus Fabricius, 1793 [1793-1794], (1): 326 ("Indiis").
=*Plastingia reichenowi* Plötz, 1879b: 357 (Guinea).
=*Pardaleodes festus* Mabille, 1890a: 33; pl. 3, fig. 2 (Ivory Coast).
=*Pardaleodes torensis* Bethune-Baker, 1906: 341 (Toro, Kenya).
=*Pardaleodes aurivilli* Reuss, 1921: 25 (N. Cameroon).

Evans (1937: 106) lists the nominate form and *torensis* as subspecies, but we can find no dependable means of separating the two; *torensis* does not appear worthy of retention. This is another of the highly variable members of the genus.

We are following Evans (1951: 1272) and Berger (1962: 453) in substituting the long-forgotten Fabrician name *tibullus* for the familiar *reichenowi*, under which name the species has been known since the proposal of *reichenowi*. We do this under protest, as in the case of *Sarangesa tertullianus*, since the Fabrician description could apply to other species as well as to the familiar *"reichenowi"*.

A change of name is especially unfortunate for this species since

it is perhaps the commonest hesperiid in the Guinean rain forest and the one most commonly reported in small collections. It inhabits the small forest clearings with *P. edipus* and members of the Genus *Ceratrichia* (Birket-Smith, 1960b: 1271-1272).

This species is known from Sierra Leone and Guinea to Gabon and east into Uganda and Kenya; the material in Carnegie Museum is primarily from the eastern and southern parts of the range.

Liberia: Kaouyeke, 1 ♂, III (Picard, 1950: 626); Harbel, 1 ♀, I; Ganta, 1 ♂, V, 4 ♂, 3 ♀, VI (Fox).

Pardaleodes xanthopeplus Holland (Fig. 60, ♂ genitalia)

Pardaleodes xanthopeplus Holland, 1892b: 289 (Ogove).

Evans (1937: 106) mentions specimens only from Cameroon and Gabon; there are specimens in Carnegie Museum from those two countries and from Rio Muni.

A Liberian specimen represents a considerable range extension of *xanthopeplus*: Liberia, W. Africa, 1 ♂ (A. C. Good). There is a possibility the specimen was mislabelled, since Good collected extensively in Cameroon and Gabon.

Genus **XANTHODISCA** Aurivillius

Xanthodisca Aurivillius, 1925 [1908-1925]: 528. Type-species: *Astictopterus vibius* Hewitson, by monotypy.

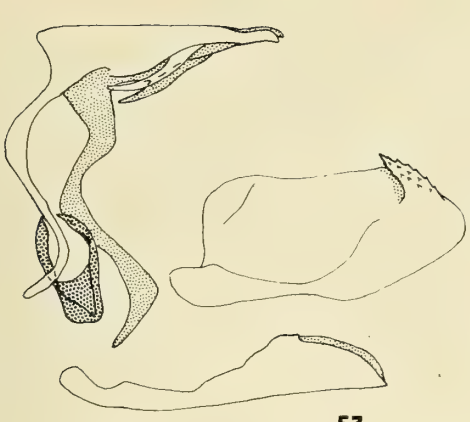
There are four species in *Xanthodisca,* two of which are Liberian and a third may occur there.

Xanthodisca rega (Mabille) (Fig. 61, ♂ genitalia)

Astictopterus rega Mabille, 1889: 149 (Sierra Leone).
=*Osmodes staudingeri* Holland, 1896: 42; pl. 3, fig. 20 (Ogove).
=*Parosmodes sierrae* Holland, 1896: 78; pl. 4, fig. 19 (Sierra Leone).

Evans (1937: 107-108) considered *rega* a subspecies of *vibius* (Hewitson). The genitalia of the species cannot be distinguished, but they differ markedly in facies and have overlapping ranges. With the

Figures 57-62, ♂ genitalia. Fig. 57, *Pardaleodes edipus,* Harbel, Liberia. Fig. 58, *P. sator,* Harbel, Liberia. Fig. 59, *P. tibullus,* Ganta, Liberia. Fig. 60, *P. xanthopeplus,* Liberia. Fig. 61, *Xanthodisca rega,* Harbel, Liberia. Fig. 62, *X. astrapte,* Yendamalahoun, Liberia.



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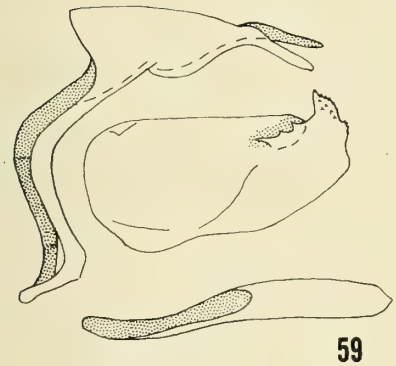

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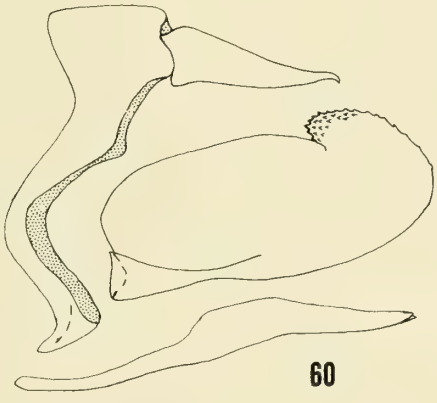

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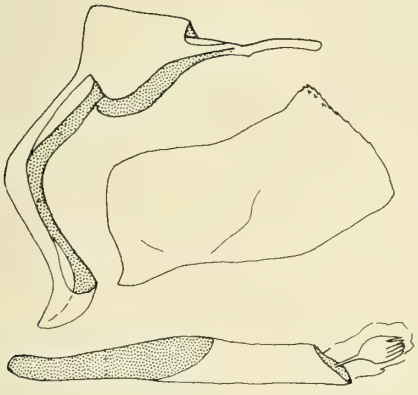

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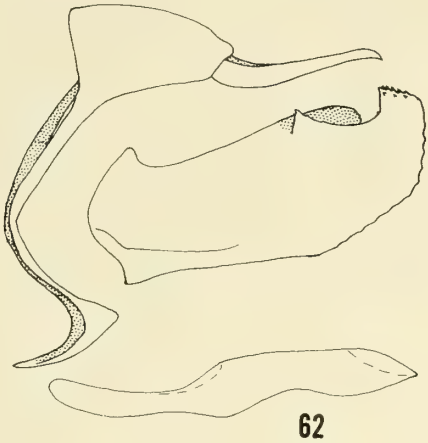

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exception of the Holland type of *Osmodes staudingeri, rega* appears to be restricted to Occidental Africa from Sierra Leone to northern Cameroon. There is no reason to suspect that the Holland type is mislabelled since Berger (1962: 453) records *vibius* from Ivory Coast; it must be assumed that these are distinct but closely related species, not subspecies. Material from northern Cameroon and Nigeria is badly needed to show whether the two species are sympatric with overlapping ranges or whether there is interdigitation of the ranges.

The following Liberian records are apparently the first: Harbel, 3 ♂, I, 9 ♂, II, 4 ♂, III, 2 ♂, IV, 3 ♂, VI, 1 ♂, IX, 1 ♂, X, 1 ♂, XI; Bomi Hills, 1 ♂, IV; Ganta, 1 ♂, VI, 1 ♀, X; Wanau Forest, 1 ♂, I, 1 ♂, II, 1 ♂, III, 3 ♂, VI, 1 ♀, X (Fox).

[**Xanthodisca vibius** (Hewitson)]

Astictopterus vibius Hewitson, 1878: 343 (Gabon).

This species is included as a possible Liberian resident since Berger (1962: 453) reports a male from Mount Tonkoui, Ivory Coast, at 1300 meters elevation. This is as strange a record for *vibius* as is the Holland type of *Osmodes staudingeri* for *rega,* and it lends further credence to the hypothesis that *rega* and *vibius* are very closely related to, but distinct from, one another.

Xanthodisca astrapte (Holland) (Fig. 62, ♂ genitalia)

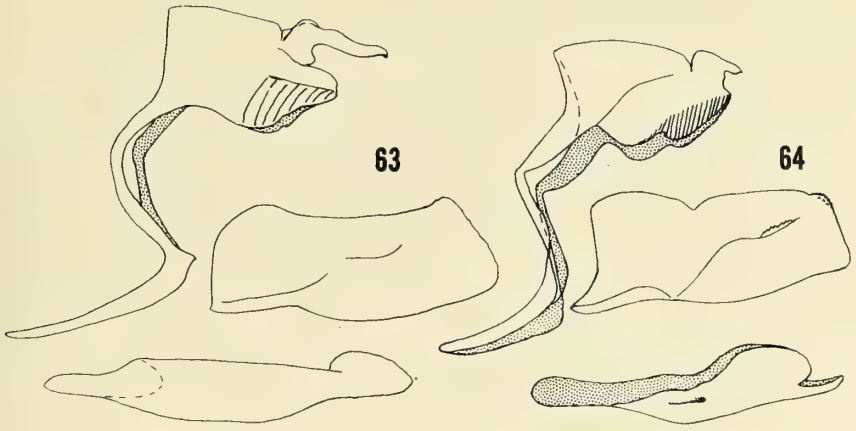
Pardaleodes astrapte Holland, 1892b: 200 (Ogove).
=*Pardaleodes parcus* Karsch, 1893: 258 (Togo).
=*Pardaleodes eurydice* Aurivillius, 1925: 1247; pl. 50, fig. 12 (Congo).

The previously recorded range of *astrapte* is Ivory Coast to Gabon and east to the Congo (Evans, 1937: 108; Holland, 1892b: 200; Berger, 1962: 453) and there are specimens in Carnegie Museum from Cameroon, Rio Muni and Gabon in addition to the following ones.

Liberian records, apparently the first published, are: Liberia, W. Africa, 1 ♂ (A. C. Good); Yendamalahoun, 1 ♂, IV (Fox).

Genus **RHABDOMANTIS** Holland

Rhabdomantis Holland, 1896: 44. Type-species: *Hesperia galatia* Hewitson, by original designation.



Figures 63-64, ♂ genitalia. Fig. 63, *Rhabdomantis galatia,* Wanau Forest, Liberia. Fig. 64, *R. sosia,* Efulen, Cameroon.

This genus which is very closely allied to the next, contains two species, both of which occur in Liberia. We believe, on the basis of locality records in the Carnegie Museum collection, that Evans (1937: 109) wrongly associated the females of these two species in his key. The following key to the species of *Rhabdomantis* should suffice to identify specimens of both sexes.

Key to Species of Rhabdomantis

1. ♂ forewing above with narrow black postdiscal brand from M_1 to inner margin; ♀ lacks distinct upper cell spot on forewing ..... *galatia* (Hewitson)
   ♂ forewing with no postdiscal brand; ♀ forewing with distinct upper cell spot ..... *sosia* (Mabille)

Rhabdomantis galatia (Hewitson) (Fig. 63, ♂ genitalia)

Hesperia galatia Hewitson, 1868: 36 (Old Calabar, Nigeria).
=*Pamphila rhabdophorus* Mabille, 1889: 149 (Sierra Leone).

Evans (1937: 109-110) records this skipper from Sierra Leone to Cameroon and east through the Congo to Uganda.

Liberia: Harbel, 1 ♀, III, 1 ♀, IV, 1 ♀, X; Wanau Forest, 2 ♂, II (Fox).

The Carnegie Museum series also includes specimens from Cameroon, Rio Muni and Gabon which agree in all respects with the Liberian material.

Rhabdomantis sosia (Mabille) (Fig. 64, ♂ genitalia)

Pamphila sosia Mabille, 1891: 171 (Mozambique).

Evans (1937: 110) mentions specimens from Guinea and Sierra Leone in a range extending south to Gabon and Mozambique, so the following record, the first from Liberia, is not surprising. Liberia: Ganta, 1 ♂, VII (Fox).

We have also seen many specimens from Ghana, Cameroon, and Rio Muni.

Genus **OSMODES** Holland

Osmodes Holland, 1892b: 291. Type-species: *Hesperia laronia* Hewitson, by original designation.

Osmodes has recently been reviewed by Miller (1964) and his arrangement of the species is followed here. Based on characters of the wing venation and of the male terminalia, the genus is broken into two major species groups. Since the male genitalia of the species are sufficiently figured by Miller, repetition of the figures here is unnecessary.

Of the thirteen species assigned to the genus, seven have been taken in Liberia and another is to be expected there. A ninth species, *O. costatus* Aurivillius (1896: 284; fig. 15), may be found one day in the eastern part of the country. Evans (1937: 113-114) records it from Ghana but Berger (1962) does not report it from Guinea or Ivory Coast.

The **laronia** group

These skippers are characterized by the straight uncus of the male genitalia and the arising of the cubital veins more basad than in the next group. There are five species, three of which have been taken in our area.

Osmodes laronia (Hewitson)

Hesperia laronia Hewitson, 1868: 34 (Old Calabar, Nigeria).
=*Plastingia bicuta* Holland, 1896: 40 (Mabille ms. name).

This species is recorded from Guinea and Sierra Leone to Gabon and east into Kenya (Miller, 1964: 283-284).

Liberia: Liberia, 1 ♂ (Evans, 1937: 112); Maloubli, 1 ♂, IV (Picard, 1950: 626).

There are specimens in Carnegie Museum from Cameroon, Gabon, Uganda and Kenya.

Osmodes omar Swinhoe

Osmodes omar Swinhoe, 1916: 483 (Entebbe, Uganda).

This species is considered to be quite close to the preceding one. It occupies a northern range in the Guinean rain forest and does not penetrate into Gabon, the only species of the genus so restricted. It is known from Guinea to Cameroon and Uganda; specimens in Carnegie Museum are only from Cameroon.

Liberia: Penoke, 2 ♂, IV (Picard, 1950: 626).

Osmodes lux Holland

Osmodes lux Holland, 1892b: 291 (Ogove).

This species is recorded from Liberia to Gabon and east to Uganda (Miller, 1964: 285-286), but not in all countries through this range.

Liberia: Wanau Forest, 2 ♂, III (Fox).

In addition, there are specimens from Cameroon, Rio Muni and Gabon (type series) in the Carnegie Museum collection.

The **adon** group

These butterflies are characterized by the depressed uncus and by the cubital veins of the hindwing being anastomosed with the cubital stem for a longer distance than in the *laronia* group. Of the eight species assigned to this group, four are found in Liberia and another is to be expected there.

Osmodes thora (Plötz)

Plastingia thora Plötz, 1884b: 145 (Guinea).
=*Pamphila chrysauge* Mabille, 1891: 172 (Loko, Sierra Leone).
=*Osmodes thops* Holland, 1896: 43; pl. 4, figs. 4, 6 (Benito, Rio Muni).

O. thora, the most widespread member of the *adon* group, is recorded from Guinea and Sierra Leone to Angola and east to Bahr-el-Ghazal, Uganda and Kenya. It appears to be one of the most ecologically tolerant *Osmodes*; the following records for Liberia may be misleading because all are coastal. We would expect *thora* to occur generally throughout this area.

Liberia: Liberia, 1 ♂, 1 ♀ (Evans, 1937: 112); Harbel, 1 ♀, II, 1 ♀, III, 1 ♂, X; Bomi Hills, 1 ♂, IV (Fox).

There are also specimens in Carnegie Museum from Cameroon, Rio Muni, Gabon, Uganda and Kenya.

[Osmodes adon (Mabille)]

Pamphila adon Mabille, 1889: 149 (Sierra Leone).
=*Osmodes barombina* Neustetter, 1916: 106 (Cameroon).
=*Osmodes adon noda* Evans, 1951: 1272 (Bitje, Cameroon).

This species, one of the rarest *Osmodes,* has been recorded from Sierra Leone, Ghana and Cameroon, and the "subspecies" *noda* is known from Cameroon, Gabon and the Congo. Inasmuch as Carnegie Museum material of *adon* is from the center of the range of *noda,* the latter can hardly be a subspecies, as noted by Miller (1964: 289). Since *adonia* Evans (1937: 113), described as an *adon* subspecies, has been raised to specific ranking on the basis of genitalic differences and sympatry with *adon* (Miller, 1964: 290), the status of *noda* is very much in doubt.

On the basis of the records from Sierra Leone and Ghana *adon* may be expected in Liberia, although it is thus far unreported.

Osmodes distincta Holland

Osmodes distincta Holland, 1896: 43; pl. 4, fig. 16 (Ogove).

Miller (1964: 290-291) records this species from Sierra Leone to Gabon and east to Uganda. It is apparently not uncommon.

Liberia: Ganta, 1 ♀, III; Wanau Forest, 1 ♂, IV, 1 ♀, X (all Fox).

There are also specimens (including the type) in the collection of Carnegie Museum from Cameroon, Rio Muni and Gabon.

Osmodes adosus (Mabille)

Pamphila adosus Mabille, 1889: 149 (Sierra Leone).
=*Pamphila argenteipuncta* Holland, 1896: 41 (Mabille ms. name).
=*Pamphila argenteigutta* Holland, 1896: 42 (Mabille ms. name).
=*Osmodes schultzei* Aurivillius, 1925: 1250 (Belgian Congo).

Evans (1937: 113) records *adosus* from Sierra Leone to Cameroon and east to Uganda.

There is only one Liberian record: Liberia, 1 ♂, 1 ♀ (Evans, 1937: 113).

There are specimens in Carnegie Museum from Cameroon, Rio Muni, Gabon and Uganda.

Osmodes lindseyi Miller

Osmodes lindseyi Miller, 1964: 292; pl. 29, figs. 14-17 (Metet, Cameroon).

This species most nearly resembles *adosus,* but the androconial hairs on the inner margin of the forewing beneath are black, not tannish, and the male genitalia are much different, as shown by Miller (1964: pl. 28, figs. 12 [*adosus*], 13 [*lindseyi*]).

The type series of *lindseyi* included specimens from Cameroon, Rio Muni and Gabon, and mention was made of two Liberian specimens, a male and a female which were not typical. The male is particularly characterized by the contiguous subapical and discal patches: these patches are separated in all males of the type series. This could be merely an individual variant or it could be a characteristic of a western subspecies of *lindseyi*; we hesitate to describe such an entity on the basis of a single characteristic which varies so greatly in other species of the genus *Osmodes.*

Liberia: Liberia, W. Africa, 1 ♀ (A. C. Good); Wanau Forest, 1 ♂, VI (Fox).

Genus **PAROSMODES** Holland

Parosmodes Holland, 1896: 45. Type-species: *Pamphila morantii* Trimen, by original designation.

The present genus contains two species, one of which has been recorded from Liberia. The other species, *P. morantii axis* Evans (1937: 114 [Nigeria]), is known from Ghana and could be found in at least the eastern part of Liberia.

Parosmodes lentiginosa (Holland) (Fig. 65, ♂ genitalia)

Kedestes (?) *lentiginosa* Holland, 1896: 56; pl. 4, fig. 22 (Gabon).

Evans (1937: 115) lists specimens of this rare skipper from Sierra Leone, Ghana, Cameroon and Angola.

The following is the first Liberian record: Kpain, 1 ♂, X (Fox).

There are no other specimens in Carnegie Museum, Holland's type having been deposited in the Berlin Museum.

Genus **OSPHANTES** Holland

Osphantes Holland, 1896: 46. Type-species: *Plastingia ogawena* Mabille, by original designation.

This genus, well characterized by Evans (1937: 115), contains a single species which has not been reported from Liberia but which probably occurs there.

[Osphantes ogawena (Mabille)]

Plastingia ogawena Mabille, 1891: 121 (Ogove).

This distinctive species is expected in Liberia since Evans (1937: 115-116) records it from Sierra Leone, Nigeria and Cameroon. Carnegie Museum specimens are from Cameroon and Gabon.

Genus **ACLEROS** Mabille

Acleros Mabille, 1887 [1885-1887]: 347. Type-species: *Cyclopides leucopyga* Mabille, by monotypy.

Of the eight species included in *Acleros,* four occur in Liberia.

Acleros placidus (Plötz) (Fig. 66, ♂ genitalia)

Apaustus placidus Plötz, 1879b: 360 (Aburi).
=*Acleros biguttulus* Mabille, 1889: 167 (Sierra Leone).
=*Acleros substrigata* Holland, 1894a: 28; pl. 1, figs. 10, 11 (Ogove).

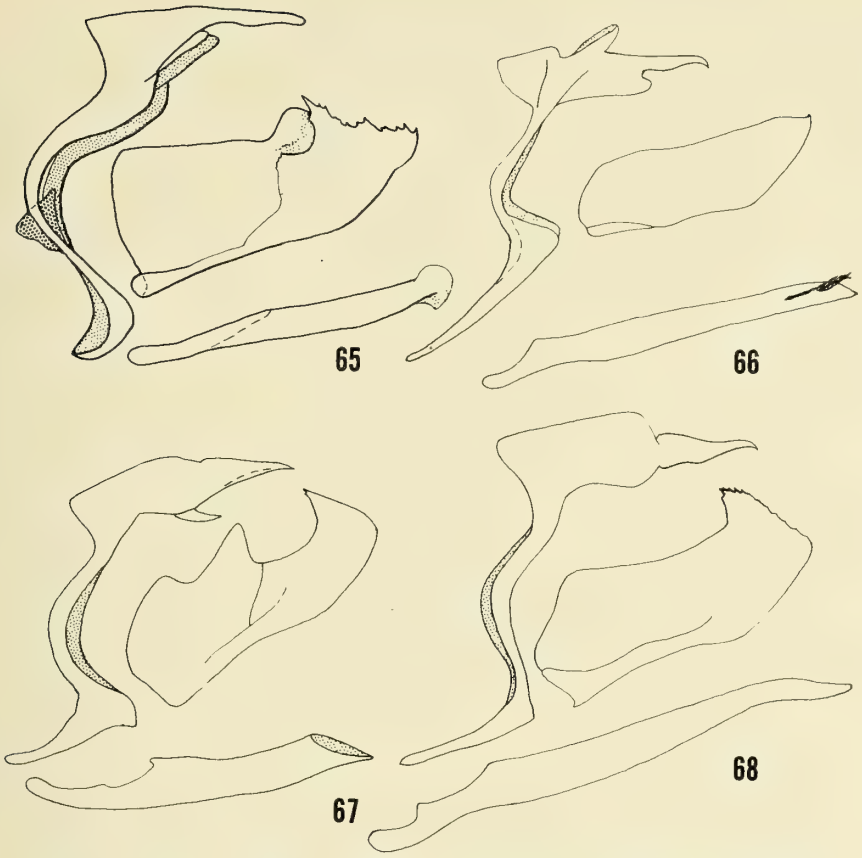
Evans (1937: 117) records this rather variable species from Guinea to Cameroon and east to South Sudan and Kenya; there are specimens in Carnegie Museum from Nigeria, Cameroon, Rio Muni, Gabon, Uganda and Kenya, as well as the material recorded below.

Liberia: Harbel, 1 ♂, V; Zorzor, 2 ♂, XI; Ganta, 1 ♂, VI, 4 ♂, 1 ♀, VII, 1 ♂, 1 ♀, IX; Wanau Forest, 1 ♂, III, 1 ♂, VIII, 1 ♀, X; Yendamalahoun, 1 ♂, IV; trail near Fisabu, 3 ♂, XII (Fox).

Acleros ploetzi Mabille (Fig. 67, ♂ genitalia)

Apaustus leucopygus Plötz, 1879b: 360 (Cameroon); preoccupied by *Cyclopides leucopyga* Mabille, 1877.
Acleros ploetzi Mabille, 1889: 168; proposed to replace *leucopygus* Plötz.

Evans (1937: 117) records the range of this species as Guinea to Cameroon and east to Kenya, Tanganyika and Mozambique.



Figures 65-68, ♂ genitalia. Fig. 65, *Parosmodes lentiginosa,* Kpain, Liberia. Fig. 66, *Acleros placidus,* Ganta, Liberia. Fig. 67, *A. ploetzi,* Harbel, Liberia. Fig. 68, *A. mackenii,* Harbel, Liberia.

Liberia: Maloubli, 1 ♀, IV (Picard, 1950: 626); Harbel, 1 ♂, I, 1 ♀, III, 1 ♀, IV, 1 ♀, VI, 1 ♂, IX; 2 ♂, X; Zorzor, 1 ♂, 1 ♀, XI; Ganta, 1 ♂, VI (all Fox).

Specimens from Nigeria, Cameroon, Rio Muni, Gabon and Uganda are also in Carnegie Museum.

Acleros nigrapex Strand

Acleros nigrapex Strand, 1912c: 47 (Alen, Cameroon).
=*Acleros pulverana* Strand, 1912c: 47 (Alen, Cameroon).
=*Acleros minisculus* Rebel, 1914: 272 (Central Africa).

This species is recorded by Evans (1937: 118) from Ghana, Cameroon, Congo and Uganda.

A Liberian specimen referable to *nigrapex* and apparently the first record from that country is: Yendamalahoun, 1 ♀, IV (Fox).

There are also specimens in Carnegie Museum from Cameroon and Uganda.

Acleros mackenii (Trimen) (Fig. 68, ♂ genitalia)

Pamphila (?) *mackenii* Trimen, 1868: 95 (Durban, Natal).
=*Apaustus olaus* Plötz, 1884c: 156 (Loango).
=*Acleros instabilis* Mabille, 1889: 168 (Zanzibar).
=*Acleros nyassicola* Strand, 1920a: 153 (Nyasaland).
=*Acleros aurifrons* Strand, 1920a: 154 (Nyasaland).
=*Acleros mackenii* f. *denia* Evans, 1937: 118 (Natal).

All six of the above names have been retained as "forms" by Evans (1937: 118-119), of which *"olaus"* is the Guinean one. Quite probably *mackenii* may be divided into geographic isolates, but Evans' solution of calling them "forms" is not a satisfactory answer. The material in Carnegie Museum collection is inadequate to undertake the task of delimiting subspecies and assigning names to them. It seems better to refer to all specimens as *mackenii* without resorting to infraspecific nomenclature for the present.

A. mackenii is reported from almost all of Africa south of the Sahara (Evans, 1937: 118-119).

Liberia: Harbel, 1 ♂, I, 1 ♀, II, 1 ♂, III, 1 ♂, X (all Fox).

There is comparative material in Carnegie Museum from Cameroon, Uganda, Kenya and several South African localities.

Genus **SEMALEA** Holland

Semalea Holland, 1896: 64. Type-species: *Hesperia pulvina* Plötz, by original designation.

Three of the six species assigned to *Semalea* have been recorded from Liberia and a fourth, *atrio* (Mabille, 1891: 82), has been collected as far west as Ghana (Evans, 1937: 121) and may eventually be found in Liberia.

Semalea pulvina (Plötz) (Fig. 69, ♂ genitalia)

Hesperia pulvina Plötz, 1879b: 353 (Aburi).

=*Hesperia ilias* Plötz, 1879b: 355 (Aburi).
=*Hesperia tenebricosa* Plötz, 1882: 316 (no locality cited).
=*Cobalus carbo* Mabille, 1889: 169 (Sierra Leone).
=*Ceratrichia paucipunctata* Bethune-Baker, 1908: 481 (Toro, Congo).
=*Baoris ilias* ab. *"punctifera"* Strand, 1912c: 51 (Cameroon).

This species is the most distinctive in the genus, due to the large, elliptical black brand on the upper surface of the hindwing, which separates it from any other *Semalea*. It is apparently a common species. Evans (1937: 120-121) reports specimens in a range bounded by Sierra Leone to Gabon and east to South Sudan, Kenya and Tanganyika.

Liberia: Harbel, 1 ♂, XI; Zorzor, 2 ♂, XI, 1 ♂, XII; Wanau Forest, 1 ♀, V, 1 ♀, X (all Fox).

The remaining specimens in Carnegie Museum are from Nigeria, Cameroon, Rio Muni, Gabon and Uganda.

Semalea sextilis (Plötz) (Fig. 70, ♂ genitalia)

Hesperia sextilis Plötz, 1886: 89 (Aburi).
=*Cobalus corvinus* Mabille, 1889: 169 (Sierra Leone).
=*Semalea noctula* ab. *"pusillima"* Strand, 1912c: 52 (Cameroon).

S. sextilis, superficially separable from *pulvina* by the lack of a hindwing brand and from the next species by its darker coloration, is recorded from Sierra Leone (Mabille, 1889: 169) to Cameroon and east into Uganda (Evans, 1937: 121).

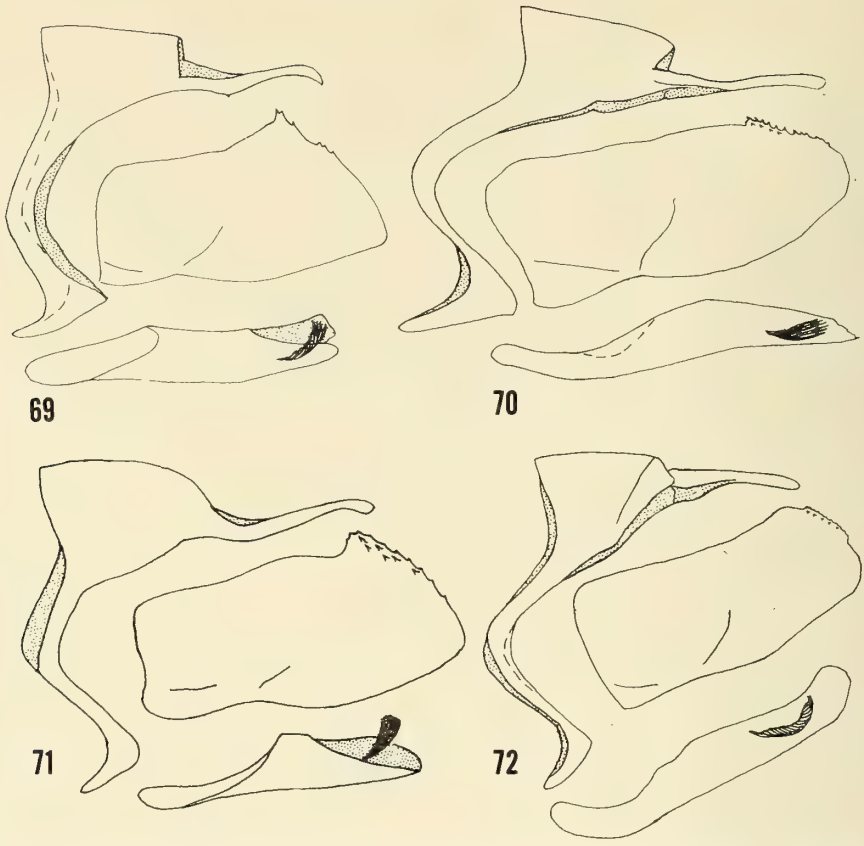
A Liberian specimen is the first record from that country: Zorzor, 1 ♂, XI (Fox).

There are also specimens in the collection of Carnegie Museum from Cameroon, Rio Muni and Gabon, those from the last two countries representing further extensions of the known range of this skipper.

Semalea arela (Mabille) (Fig. 71, ♂ genitalia)

Hypoleucis arela Mabille, 1891: 69 (Gabon).
=*Pamphila nox* Mabille, 1891: 168 (Cameroon).
=*Baoris atimus* Holland, 1896: 68 (Mabille ms. name).
=*Baoris arela* ab. *"defectula"* Strand, 1912c: 51 (Cameroon).

Evans (1937: 121) records *arela* from Guinea to Gabon and east to Kenya, Tanganyika and Nyasaland. There are many specimens in the collection of Carnegie Museum from Nigeria, Cameroon, Rio Muni, Gabon, Uganda and Kenya.



Figures 69-72, ♂ genitalia. Fig. 69, *Semalea pulvina,* Harbel, Liberia. Fig. 70, *S. sextilis,* Zorzor, Liberia. Fig. 71, *S. arela,* Liberia. Fig. 72, *Hypoleucis o. ophiusa,* Harbel, Liberia.

Liberia: Liberia, W. Africa, 4 ♂ (A. C. Good); Fish Lake, 1 ♂, I; Ganta, 1 ♂, VII (both Fox).

Genus **HYPOLEUCIS** Mabille

Hypoleucis Mabille, 1891: 69. Type-species: *Hypoleucis tripunctata* Mabille, designated by Watson, 1893: 82.

Two of the three species assigned here occur in Liberia.

Hypoleucis tripunctata tripunctata Mabille

Hypoleucis tripunctata Mabille, 1891: 69 (West Africa).
=*Hypoleucis titanota* Karsch, 1893: 254; pl. 6, fig. 5 (Bismarckburg, Togo).

Evans (1937: 123) recognizes three subspecies of which the nominate is Occidental African, occurring from Sierra Leone to Ghana.

The only specimen of the nominate subspecies in the Carnegie Museum collection is from Liberia: Cape Palmas, 1 ♀ (Naysmith).

Hypoleucis ophiusa ophiusa (Hewitson) (Fig. 72, ♂ genitalia)

Hesperia ophiusa Hewitson, 1866: 497 (no locality cited).

Evans (1937: 123) recognizes two subspecies, of which the nominate is Guinean and *H. o. ophir* Evans (1937: 123) is known only from Uganda. We have seen no Uganda specimens and cannot pass on the validity of *ophir,* but Evans' (1937: pl. 22) figure of the male genitalia is irreconcilable with the configuration of the genitalia of West African material, as may be seen by comparison with our figure. If there was no drafting error involved, and if the specimen before Evans was indeed *ophir,* serious doubt is cast on its conspecificity with *ophiusa.* With no comparative material at hand we are unable to determine what the cause was of the discrepancy with our material and Evans' figure, but we are inclined to consider it a drafting error.

Liberian records indicate this species is present throughout most of the country: Liberia, W. Africa, 5 ♂, 5 ♀ (A. C. Good); Harbel, 1 ♀, I, 1 ♀, X, 2 ♂, XI; Bomi Hills, 1 ♀, IV; Zorzor, 1 ♂, 1 ♀, XI; Ganta, 1 ♀, VIII; Wanau Forest 1 ♀, V (all Fox).

There are also many specimens in Carnegie Museum from Cameroon, Rio Muni and Gabon.

Genus **MEZA** Hemming

Gastrochaeta Holland, 1894a: 28. Type-species: *Gastrochaeta mabillei* Holland, by original designation; preoccupied by *Gastrochaeta* Dujardin, 1841.

Meza Hemming, 1939: 39. Type-species: *Hesperia meza* Hewitson, by original designation; proposed to replace *Gastrochaeta* Holland.

Of the ten species included in the present genus, four occur in Liberia. Two other species are to be expected in our area. An additional female cannot be assigned to any known species.

Meza meza (Hewitson) (Fig. 73, ♂ genitalia)

Hesperia meza Hewitson, 1877a: 79 (Angola).
=*Apaustus batea* Plötz, 1879b: 359 (Aburi).

=*Pamphila bubovi* Karsch, 1893: 251; pl. 6, fig. 10 (Bismarckburg, Togo).
=*Gastrochaeta varia* Holland, 1896: 38 (Mabille ms. name).
=*Baoris ogrugana* Lathy, 1903: 204; pl. 8, fig. 12 (Nigeria).

Evans (1937: 125) records this species from Sierra Leone to Angola and east to Uganda.

Liberia: "W. Afr." (presumably Liberia), 1 ♂; Liberia, 1 ♂ (Naysmith); Harbel, 1 ♂, 1 ♀, I, 1 ♀, II, 1 ♂, 4 ♀, III, 1 ♀, IV, 1 ♂, X, 2 ♂, 1 ♀, XI; Zorzor, 2 ♂, XI; Ganta, 1 ♀, II, 2 ♂, VII, 2 ♀, VIII, 1 ♀, IX; Kpain, 1 ♂, V (Fox).

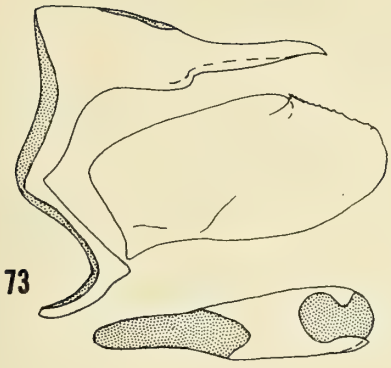
M. meza is also represented in the Carnegie Museum collection by specimens from Ghana, Cameroon and Rio Muni.

Meza species (Figs. 76, 77, ♀)

One Liberian specimen of *Meza* (Ganta, 1 ♀, VII [Fox]) can be identified with no described species of the genus. In many respects this specimen is near *M. larea* (Neave, 1910: 81; pl. 3, fig. 13), described from Bangweolo. The following similarities are noted with Neave's figure of his female type: the generally very dark appearance, the presence of only very faint light spots on the disc of the upper surface of the hindwing, and the much paler shading along the inner margin of the under surface of the forewing. These similarities are offset, however, by the absence of the purple sheen of the undersurface of the hindwing, which is heavily stressed in the original description of *larea,* and by the presence of faintly defined discal spots on the under surface of that wing, repeating those of the upper surface, which are not mentioned or figured for *larea. M. larea* is unknown west of the Congo and the huge collections in Carnegie Museum from Cameroon and Gabon have no representatives of this species.

We hesitate to designate this specimen as the type of a new species for several reasons, primarily because the characters best known in the genus, other than superficial ones, are demonstrated by the male genitalia. Naming from a single female places the burden of associating a yet-to-be-described male on future workers. There is insufficient material in Carnegie Museum to analyze the female genitalia of *Meza,*

Figures 73-81. Fig. 73, *Meza meza,* ♂ genitalia, Harbel, Liberia. Fig. 74, *M. leucophaea bassa,* new subspecies, ♂ genitalia of Holotype. Fig. 75, *M. indusiata,* ♂ genitalia, Ganta, Liberia. Fig. 76, *Meza* species, ♀, upper surface, Ganta, Liberia. Fig. 77, same, under surface. Fig. 78, *M. leucophaea bassa,* new subspecies, Holotype ♂, upper surface. Fig. 79, same, under surface. Fig. 80, *M. leucophaea bassa,* Paratype ♀, upper surface. Fig. 81, same, under surface.



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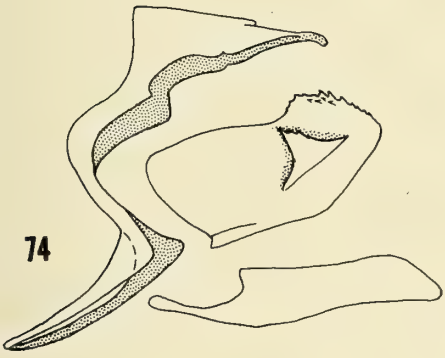

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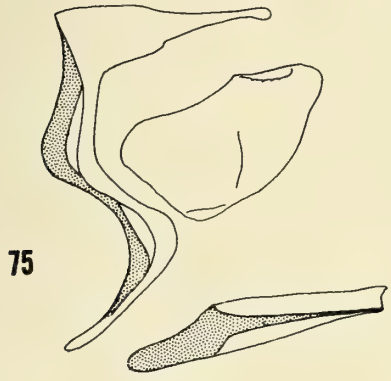

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so it seems best to merely cite and describe this specimen, but not name a new species from this single female.

[**Meza mabea** (Holland)]

Parnara mabea Holland, 1894b: 92; pl. 3, fig. 12 (Ogove).

This skipper, thus far unrecorded from Liberia, should be sought there since Evans (1937: 126) lists specimens in the British Museum collection from Sierra Leone, Ghana, Nigeria, and Cameroon. Carnegie Museum has only the type from Gabon.

Meza leucophaea bassa, new subspecies (Figs. 74, ♂ genitalia, 78, 79, ♂, 80, 81, ♀)

Male. — Upper surface similar to that of *M. l. leucophaea* (Holland, 1894b: 93; pl. 3, fig. 14 [Ogove], described as *Parnara leucophaea*), but the spots are generally larger, particularly those in spaces M_3-Cu_1 and Cu_2-A of the forewing and the discal pair of the hindwing; the fringes of the hindwing are gray-white, not clear white. The under surface differs from that of the nominate subspecies in that the hindwing from the cell to the margin is not so heavily overscaled with gray. Length of forewing of holotype from base to apex 15.5 mm. The male genitalia are indistinguishable from those of typical *leucophaea*.

Female. — All spots on the upper surface, except the subapical series, are larger than in typical *leucophaea*, especially the subquadrate spot in space Cu_1-Cu_2 of the forewing. The fringes of the hindwing are not strongly whitened. The gray-white overscaling of the hindwing beneath is less prominent toward the anal angle than in the nominate subspecies. Length of forewing of paratype from base to apex 17 mm.

Described from three specimens, two males and one female.

Holotype ♂ — Harbel (Marshall Terr.), Liberia; 30-XI-1956; R. M. Fox; ♂ genitalic slide no. M-86 (Lee D. Miller).

Paratypes. — Same locality and collector, 1 ♀, 4-V-1955, 1 ♂, 26-II-1955.

The holotype and paratypes are in the collection of Carnegie Museum (C. M. Entomology Type Series No. 504).

These specimens have been compared with the types of *M. l. leucophaea* from Gabon and other specimens from Cameroon and Rio Muni in the Carnegie Museum collection. The differences cited in the description above will serve to characterize the two subspecies.

Meza indusiata (Mabille) (Fig. 75, ♂ genitalia)

Hypoleucis indusiata Mabille, 1891: 113 (Cameroon).
=*Acleros kasai* H. H. Druce, 1909: 410; pl. 67, fig. 5 (Upper Kasai Dist., Congo).
=*Acleros kasai* ab. *"dualensis"* Strand, 1914: 160 (Cameroon).

Evans (1937: 126) lists specimens from Sierra Leone and Ghana to Gabon and east to Uganda, and most of the series in Carnegie Museum are from Cameroon.

A Liberian specimen is presumably the first record for the country: Ganta, 1 ♂, VII (Fox).

Meza mabillei (Holland)

Gastrochaeta mabillei Holland, 1894a: 28; pl. 1, figs. 15, 16 (Ogove).

Apparently this species is not common, and it occurs from Sierra Leone to Gabon. There are specimens of this distinctive species in Carnegie Museum from Cameroon and Gabon.

The only Liberian record is of a single male with no further data (Evans, 1937: 127).

[**Meza cybeutes cybeutes** (Holland)]

Gastrochaeta cybeutes Holland, 1894b: 94; pl. 3, fig. 15 (Ogove).
=*Gorgyra tessmanni* Strand, 1912c: 48 (Cameroon).

Of two subspecies recognized by Evans (1937: 127) one is East African. The nominate subspecies is known from Sierra Leone, Cameroon, Gabon and the Congo; it should be expected in Liberia. There are specimens in Carnegie Museum from Cameroon, Rio Muni and Gabon.

Genus **PARONYMUS** Aurivillius

Paronymus Aurivillius, 1925 [1908-1925]: 520. Type-species: *Hesperia ligora* Hewitson, designated by Evans, 1937: 127.

This genus, separable from the preceding primarily on pattern characteristics, contains four species, none of which is known from Liberia. Three species should be sought there and they are listed below.

[**Paronymus xanthias** (Mabille)]

Carystus xanthias Mabille, 1891: 117 (Lagos, Nigeria).

This species is expected in Liberia on the strength of records by Evans (1937: 128) from Sierra Leone and Ivory Coast. He further cites specimens from as far south as Gabon and east to Uganda. Carnegie Museum has specimens from Cameroon.

[**Paronymus ligora** (Hewitson)]

Hesperia ligora Hewitson, 1876: 450 (Angola).
=*Carystus thersander* Mabille, 1890a: 30; pl. 3, fig. 5 (Sierra Leone).

P. ligora, recorded by Evans (1937: 128) from Sierra Leone, Ghana, Cameroon, Angola and the Congo, and represented in the collection of Carnegie Museum by specimens from Cameroon and Rio Muni, should be sought in Liberia. It is thus far unreported.

[**Paronymus nevea** (H. H. Druce)]

Pardaleodes nevea H. H. Druce, 1910b: 376; pl. 35, fig. 7 (Upper Kasai Dist., Congo).

This species, unrecorded from Liberia and unrepresented in Carnegie Museum, has been taken in Guinea, Cameroon and the Congo (Evans, 1937: 128). It is apparently quite rare but the pattern of its distribution suggests it may be found in our area.

Genus **ANDRONYMUS** Holland

Andronymus Holland, 1896: 80. Type-species: *Pamphila philander* Hopffer (=*caesar*), by original designation.
=*Acromecis* Mabille, 1904: 171. Type-species: *Apaustus neander* Plötz, by monotypy.

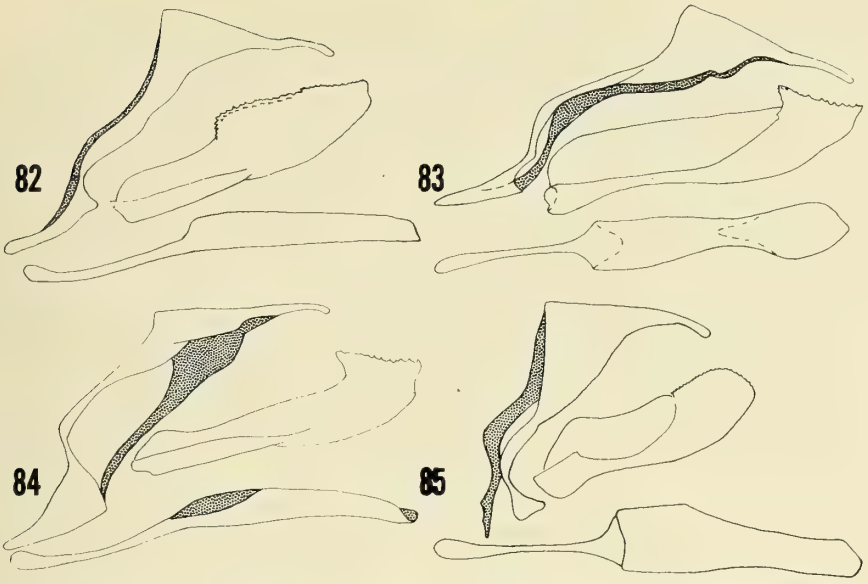
Five of the nine *Andronymus* occur in Liberia and a sixth probably does.

Evans (1937: 129) mentions in his generic discussion that females seem commoner than males. Examination of the series before us also shows females to be commoner than males.

Andronymus neander neander (Plötz) (Fig. 82, ♂ genitalia)

Apaustus neander Plötz, 1884c: 154 (Loango).
=*Ancyloxypha producta* Trimen, 1889 [1887-1889], 3: 334 (Delagoa Bay).

A. neander is a well-known migratory species in East Africa (Williams, 1958: 48, 102, 108, 121, 140, 178, 181), particularly in Tanganyika. Some interesting notes accompanying a long series from Metet, Cameroon, taken by A. I. Good indicate it is a migratory species there, too. In a note of April 15, 1918, he states, "Yesterday and today in the afternoon there has been a flight of this species, passing towards the S. W. in thousands." The following day he wrote that the flight was becoming sparser and beginning to end. This is evi-



Figures 82-85, ♂ genitalia. Fig. 82, *Andronymus n. neander,* Ganta, Liberia. Fig. 83, *A. c. caesar,* Batanga, Cameroon. Fig. 84, *A. antonius,* new species, Holotype. Fig. 85, *A. helles,* Efulen, Cameroon.

dently the only record of a migration of this skipper in the Guinean Subregion. Careful observation will determine whether or not *neander* is migratory in Liberia.

According to Evans (1937: 130) this species ranges from Gambia to Cameroon and east to Kenya and Mozambique as the nominate subspecies.

Liberian specimens, which may be the first records for the country are: Ganta, 2 ♂, 1 ♀, III (Fox).

In addition to the long series from Cameroon mentioned above, Carnegie Museum has a few specimens from Congo and Uganda.

Andronymus caesar caesar (Fabricius) (Fig. 83, ♂ genitalia)

Hesperia caesar Fabricius, 1793 [1793-1794], (1): 340 ("Indiis").
=*Apaustus leander* Plötz, 1879b: 360 (Guinea).

In Liberia, at least, this species seems to be restricted to the forests of the coastal shelf. Such cannot be the case throughout Africa, since *c. caesar* is recorded from Congo and other inland areas and *c. philander* (Hopffer, 1855: 643 [Mozambique], as *Pamphila philander*) is found throughout East Africa.

Liberia: no data, 1 ♀ (Evans, 1937: 130); Harbel, 1 ♀, VI; Fish Lake, 1 ♀, I (Fox).

There are also specimens of the nominate subspecies in Carnegie Museum from Cameroon and Rio Muni.

Andronymus antonius, new species (Figs. 84, ♂ genitalia, 86, 87, ♂, 88, 89, ♀)

Male. — The upper surface is blackish-brown with maculation closely resembling that of *caesar,* but differing in the following particulars: the translucent spots of the forewing are more elongate, especially those in spaces M_3-Cu_1 and Cu_2-A, the former being longer than the lower cell spot; the discal spot of the hindwing is bordered with cream-colored or yellow scales rather than whitish ones. The under surface is also reminiscent of that of *caesar,* but the paler shade along the inner margin of the forewing is broader and less regular and the dark patch extending from the inner margin to the cell of the hindwing is not so produced toward the anal angle. Length of forewing from base to apex is 16 mm. in the holotype, 14 and 16.5 mm. in the two male paratypes. The male genitalia are close to those of *caesar,* but the dorsal distal process of the valva is broader and more coarsely toothed in the present species, as may be seen by comparison of the figures.

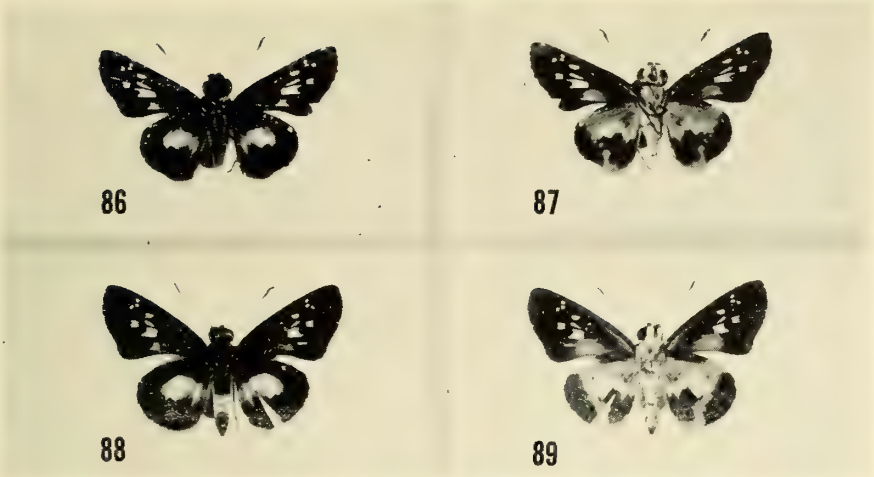
Female. — The upper surface is intermediate between that of *caesar* and the next species, the spots of the forewing being smaller than in the former species and somewhat larger than in the latter; the pale discal are of the hindwing is more extensive than in *caesar* and roughly comparable in size to that of *hero* Evans, but the latter has this patch margined with white scales, never creamy yellow ones, as in the present species. The differences set forth to distinguish the under surface from that of *caesar* in the male apply to the female as well. The forewings are longer and more pointed than those of *hero.* The lengths of the forewings of the female paratypes are between 15 and 18 mm., averaging 16.5 mm.

This species is described from twelve specimens, three males and nine females, collected in Liberia and in the collection of Carnegie Museum (C. M. Entomology Type Series No. 505).

Holotype ♂. — Ganta, Liberia; 4-VI-1958; R. M. Fox; ♂ genitalic slide no. M-295 (A. W. Lindsey).

Paratypes. — 2 ♂, 9 ♀, all Liberia. 1 ♀, Bomi Hills, 2-IV-1955; 1 ♀, St. Paul River at Zorzor Road, 18-V-1955; 1 ♂, Ganta, 26-II-1958; 5 ♀, Ganta, 13-VI-1958, 17-VI-1958 [2], 25-VI-1958, 8-VII-1958 (♀ genitalic slide no. M-95 [Lee D. Miller]); 1 ♂, Wanau Forest Reserve, 21-I-1958; 1 ♀, Wanau Forest, 6-VI-1958; 1 ♀, Kpain, 21-X-1958. All collected by R. M. Fox.

This species is closely related to *caesar,* which it seems to replace inland in Liberia, based on the few available records. It is so distinct genitalically and superficially that it cannot be considered merely an inland subspecies of *caesar.*



Figures 86-89, *Andronymus antonius,* new species. Fig. 86, Holotype ♂, upper surface. Fig. 87, same, under surface. Fig. 88, Paratype ♀, upper surface, Ganta, Liberia. Fig. 89, same, under surface.

Andronymus hero Evans

Andronymus hero Evans, 1937: 131; pl. 5, fig. 70 (Sierra Leone).

This species was described from Sierra Leone and occurs as far south and east as Angola and the Congo (Evans, 1937: 131), but it has not been previously recorded from Liberia.

The following specimens are the first from Liberia: Ganta, 1 ♂, XII, and Wanau Forest, 1 ♀, X (Fox).

Carnegie Museum has other specimens from Cameroon and Gabon.

Andronymus helles Evans (Fig. 85, ♂ genitalia)

Andronymus helles Evans, 1937: 131; pl. 5, fig. 71 (Bitje, Cameroon).

Evans' type series contained specimens from Sierra Leone and Liberia south and east to Angola and the Congo.

Liberia: no data, 2 ♀ (Evans, 1937: 131); "W. Afr." (presumably Liberia), 1 ♀ (Naysmith); Ganta, 1 ♀, VII (Fox).

There are also many specimens in Carnegie Museum from Cameroon, Rio Muni and Gabon.

Andronymus evander (Mabille)

Carystus evander Mabille, 1890a: 30; pl. 3, fig. 4 (Sierra Leone).
=*Pardaleodes kelembaensis* Strand, 1918: 103 (Kelemba, Congo).

This species is recorded from Sierra Leone to Gabon and east into the Congo (Evans, 1937: 131). There are specimens in Carnegie Museum from Cameroon and Gabon in addition to those which follow.

Liberia: Bomi Hills, 2 ♀, IV; Ganta, 1 ♀, V, 1 ♀, VI; Yendamalahoun, 1 ♀, IV (Fox).

Genus **ZOPHOPETES** Mabille

Zophopetes Mabille, 1904: 183. Type-species: *Pamphila dysmephila* Trimen, designated by Lindsey, 1925: 106.

There are five species in the present genus, one of which has been recorded from Liberia, although three others may be expected there.

[**Zophopetes ganda** Evans]

Zophopetes ganda Evans, 1937: 142; pl. 5, fig. 79 (Ivory Coast).

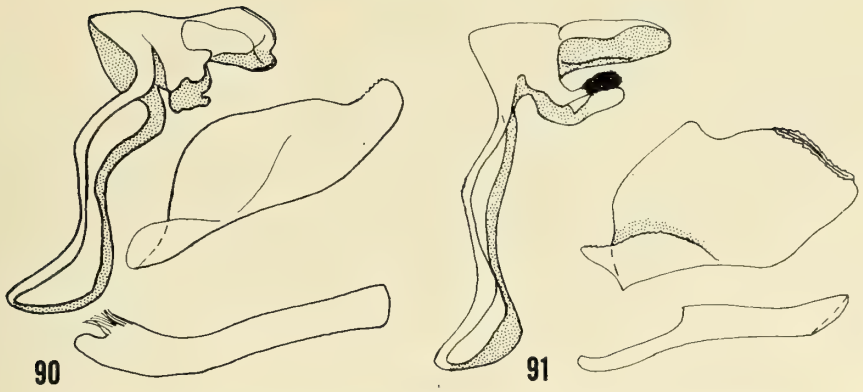
This species, described from specimens taken in neighboring Ivory Coast, Ghana and Nigeria, has not been reported from our area but it may be expected there, especially in the eastern part of the country. Berger (1962: 457) also mentions specimens from Ivory Coast. Carnegie Museum has specimens from Cameroon and Gabon, representing a considerable southeastward extension of the known range of *ganda*.

[**Zophopetes dysmephila** (Trimen)]

Pamphila dysmephila Trimen, 1868: 96 (Kaffraria).
=*Pamphila quaternata* Mabille, 1876: 268 (Senegambia).
=*Hesperia schulzi* Plötz, 1882: 326 (Angola).
=*Hesperia mucorea* Karsch, 1892a: 178 (Baliburg, Cameroon).

Evans (1946: 647) recognizes *dysmephila* and *quaternata* as subspecies, limiting the latter to the Senegal-Senegambia area, but there are overlapping records. In view of the rather broad sympatry, it seems better merely to synonymize the Mabille name. Evans' (1937: pl. 24) drawings of the male genitalia of this species and the next appear to be confounded. His drawing of *dysmephila* is apparently of *cerymica*, and *vice versa*. With this fact in mind, the male terminalia of both species conform well to his figures.

Z. dysmephila has not been recorded from Liberia but it is almost certainly a resident of that country since Evans (1937: 143) mentions



Figures 90-91, ♂ genitalia. Fig. 90, *Zophopetes cerymica,* Harbel, Liberia. Fig. 91, *Artitropa c. comus,* Zorzor, Liberia.

specimens from Senegambia, Senegal, and Uganda south to South Africa and deFleury (1926: 154) records it from Guinea as *quaternata.* Carnegie Museum specimens are from Cameroon, Uganda, Kenya and Natal.

Zophopetes cerymica (Hewitson) (Fig. 90, ♂ genitalia)

Hesperia cerymica Hewitson, 1867 [1856-1876], 4: [108]; pl. [57], figs. 20, 21 (Old Calabar, Nigeria).
=*Hesperia weiglei* Plötz, 1886: 90 (Aburi).

Evans (1937: 143) considers *nobilior* (Holland, 1896: 95; pl. 5, fig. 2 [Congo]) a subspecies of *cerymica,* but the male genitalia differ significantly from those of the latter species, warranting its consideration as a separate, but closely related, species. He gives the range of *cerymica* as Senegambia to Cameroon, but mentions no specimens from Liberia.

The following may be new records for Liberia: Harbel, 1 ♂, V; Ganta, 1 ♀, II, 1 ♂, VI (Fox).

There are also specimens in Carnegie Museum from Nigeria and Cameroon.

[**Zophopetes haifa** Evans]

Zophopetes haifa Evans, 1937: 143; pl. 5, fig. 80 (Bitje, Cameroon).

This species is listed as a possible member of the Liberian fauna on the basis of a record from Ivory Coast of a single specimen (Berger,

1962: 457). Other than that specimen, *Z. haifa* is known only from the type.

Genus **GAMIA** Holland

Gamia Holland, 1896: 84. Type-species: *Proteides galua* Holland (=*shelleyi*), by original designation.

Two species are included in *Gamia,* neither yet recorded from Liberia, but both to be expected there.

[**Gamia buchholzi** (Plötz)]

Hesperia buchholzi Plötz, 1879b: 354 (Aburi).
=*Proteides ditissimus* Mabille, 1891: 112 (Sierra Leone).
=*Gangara* (?) *basistriga* Holland, 1894a: 29; pl. 1, fig. 12 (Ogove).
=*Gamia robustus* Holland, 1896: 85 (Mabille ms. name).

This species is expected to occur in Liberia on the strength of the type locality of *ditissimus* and Berger's (1962: 457) record of reared specimens from Ivory Coast. Specimens in Carnegie Museum are from Cameroon, Gabon and Uganda.

[**Gamia shelleyi** (Sharpe)]

Proteides shelleyi Sharpe, 1890: 349 (Fantee).
=*Proteides galua* Holland, 1891a: 3 (Ogove).
=*Hesperia zintgraffi* Karsch, 1892a: 178 (Cameroon).

This skipper, represented in the collection of Carnegie Museum by specimens from Cameroon, Gabon and Uganda, is to be expected in Liberia on the basis of Evans' (1937: 144) records from Guinea and Ghana.

Genus **ARTITROPA** Holland

Artitropa Holland, 1896: 92. Type-species: *Pamphila erinnys* Trimen, by original designation.

Artitropa, primarily an East and South African genus, contains seven species, only one of which is Guinean. This species occurs in Liberia.

Artitropa comus comus (Stoll) (Fig. 91, ♂ genitalia)

Papilio comus Stoll, 1782 [1775-1791], 4: pl. 392, figs. N, O; 1784, p. 212 ("Surinam").

=*Papilio helops* Drury, 1782 [1770-1782], 3: 45; pl. 33, figs. 2, 3 ("Brazil").
=*Hesperia ennius* Fabricius, 1793 [1793-1794], (1): 337 ("Indiis").
=*Proteides margaritata* Holland, 1890b: 155 (Ogove).

Evans (1937: 145) recognizes two subspecies, of which the nominate is recorded from Sierra Leone to Gabon and the Congo.

The Holland type of *margaritata* is in Carnegie Museum and it differs rather markedly from the other specimen before us, one from Liberia. There is insufficient material, however, to consider this to be more than individual variation and the validation of Holland's name at this time for the Gabon material is not advisable.

Apparently a new record for Liberia is: Zorzor, 1 ♂, XII (Fox).

Genus **MOPALA** Evans

Mopala Evans, 1937: 148. Type-species: *Ismene* (?) *orma* Plötz, by original designation.

The single species occurs in Liberia. The dissimilarities between the present genus and the closely-related *Caenides* are well described in the generic discussion by Evans (1937: 148).

Mopala orma (Plötz) (Fig. 92, ♂ genitalia)

Ismene (?) *orma* Plötz, 1879b: 363 (Agoncho).
=*Hesperia violescens* Plötz, 1882: 322 ("Africa").

Evans (1937: 148) records *orma* from Ivory Coast to Gabon and east through the Congo to Uganda. In addition to the specimen listed below, Carnegie Museum has specimens from Cameroon and Gabon.

The first Liberian record is: Harbel, 1 ♂, X (Fox).

Genus **GRETNA** Evans

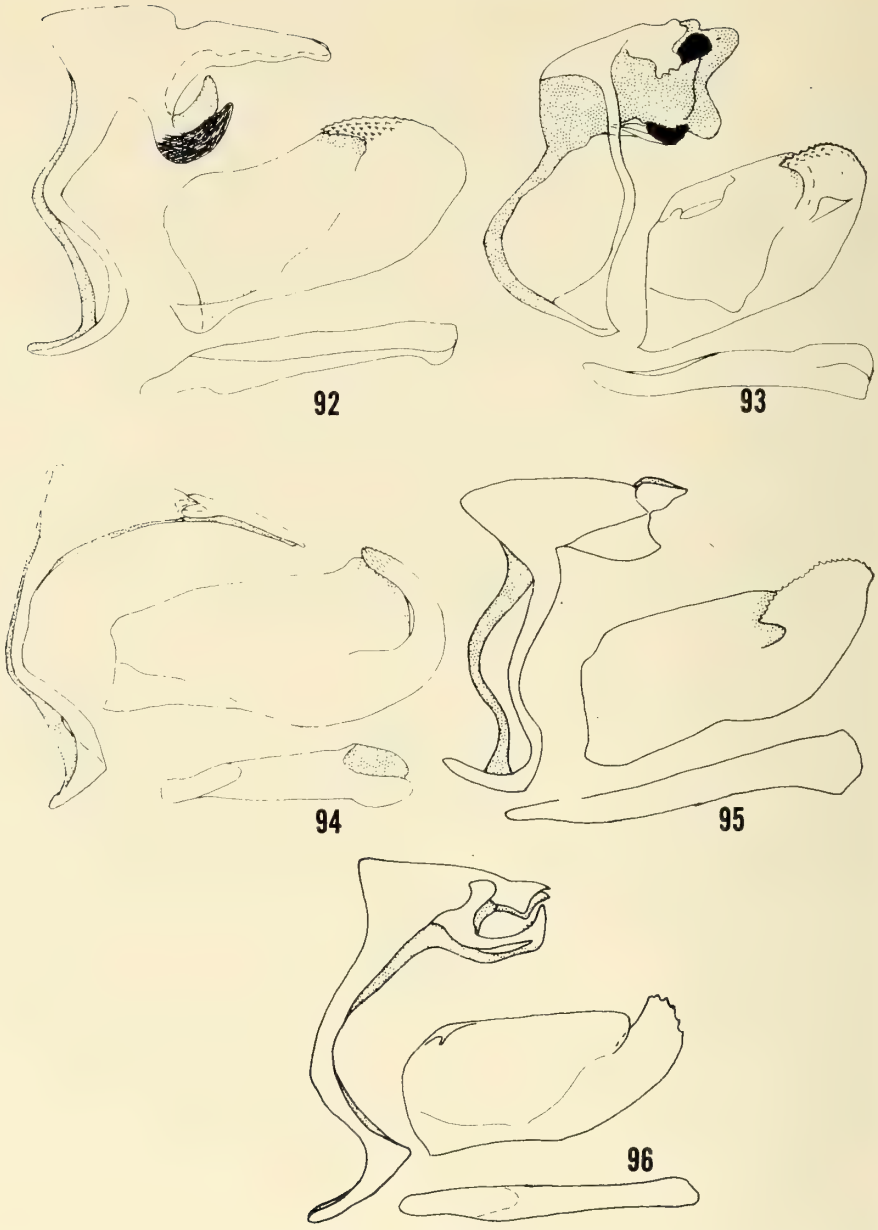
Gretna Evans, 1937: 149. Type-species: *Hesperia cylinda* Hewitson, by original designation.

This is a small genus of seven large species, four of which are found in Liberia.

Gretna waga (Plötz) (Fig. 93, ♂ genitalia)

Telesto waga Plötz, 1886: 108 (Aburi).
=*Hesperia ilerda* Möschler, 1887: 65; fig. 16 (Aburi).

Recorded from Senegal to Gabon and east into the Congo, *waga* is represented in Carnegie Museum by specimens from Cameroon, Rio



Figures 92-96, ♂ genitalia. Fig. 92, *Mopala orma,* Harbel, Liberia. Fig. 93, *Gretna waga,* Harbel, Liberia. Fig. 94, *G. lacida,* Harbel, Liberia. Fig. 95, *G. cylinda,* Ogove River, [Gabon]. Fig. 96, *G. balenge zowa,* new subspecies, Holotype.

Muni and Gabon, in addition to those listed below.

Liberia: no data, 1 ♀ (Evans, 1937: 150); Harbel, 1 ♂, 1 ♀, IV, 1 ♀, no date; Ganta, 1 ♂, VI (all Fox).

Gretna lacida (Hewitson) (Fig. 94, ♂ genitalia)

Hesperia lacida Hewitson, 1876: 449 (Angola).

Evans (1937: 150) lists specimens from Sierra Leone, Cameroon and Gabon. There are specimens in Carnegie Museum from Cameroon.

The first Liberian record is: Harbel, 1 ♂, X (Fox).

Gretna cylinda (Hewitson) (Fig. 95, ♂ genitalia)

Hesperia cylinda Hewitson, 1876: 453 (Angola).
Proteides ruralis Holland, 1896: 89 (Mabille ms. name).

An interesting note on one specimen from Gabon (Ogove River) by A. I. Good says, "This species was caught about 7 a.m. on a cloudy morning flitting about the porch, and as far as I have observed is only seen at such times." This probably indicates that *cylinda* is a crepuscular species and as such may occur widely but be missed by collectors who generally leave the twilight hours untried for butterflies.

This species is recorded from Ghana to Angola and east to South Sudan and Uganda (Evans, 1937: 150).

Liberia: Tchien, 1 ♂, IV (Picard, 1950: 626); Ganta, 1 ♂, VI (Fox).

There are also many specimens from Cameroon, Rio Muni, Gabon and Uganda in the Carnegie Museum collection.

Gretna balenge zowa, new subspecies (Fig. 96, ♂ genitalia, 97, 98, ♂)

Male. — This subspecies differs from typical *b. balenge* (Holland, 1891a: 5) in that the spots of the forewing are reduced in size and the cell spot is offset proximad, so that its distal margin is in line with the proximal margin of the prominent spot in space Cu_1-Cu_2, rather than in line with the middle of the spot as in the nominate subspecies. These differences are shown in the comparative figures of the types of both subspecies. The pattern of the under surface is very like that of typical *balenge*, but the light markings along the costa and near the apex of the forewing are not so distinct. Length of the forewing of the holotype from base to apex is 29.5 mm.; the forewing tips on both sides of the male paratype are missing, but the specimen is approximately the same size as the holotype. The male genitalia do not differ significantly from those of the typical subspecies.

The female is unknown.

Figures 97-100, the types of the subspecies of *Gretna balenge*. Fig. 97, *G. b. zowa*, new subspecies, Holotype ♂, upper surface. Fig. 98, same, under surface. Fig. 99, *G. b. balenge* (Holland), Holotype ♂, upper surface. Fig. 100, same, under surface.

Described from two males from Liberia in the collection of Carnegie Museum (C. M. Entomology Type Series No. 506).

Holotype ♂. — Ganta, Liberia; 30-V-1958; R. M. Fox; ♂ genitalic slide no. M-229 (Lee D. Miller).

Paratype ♂. — Same locality and collector as holotype; 28-V-1958; genitalic slide no. M-106 (Lee D. Miller).

For purposes of comparison, the type of *G. b. balenge* (Holland) is figured here (Figs. 99, 100, ♂). In the original description the type locality was cited as Ogove, but labels on the male holotype refer to Benito, Rio Muni. Since both Rio Muni and Gabon are within the range of *b. balenge* it is not altogether certain just which locality is the type locality, but Holland frequently considered Benito as being about equivalent to "Valley of the Ogove", so the type locality is probably Rio Muni.

The type series of *zowa* represents the first record of *balenge* from so far west, but a specimen mentioned by Berger (1962: 458) from Ivory Coast may also refer to *zowa*. Evans (1937: 151) records *balenge* from Nigeria, Cameroon, Gabon and the Congo, and these specimens are almost certainly all *b. balenge*, as is one from Cameroon in Carnegie Museum.

Genus **PTEROTEINON** Watson

Tanyptera Mabille, 1877c: 230. Type-species: *Hesperia laufella* Hewitson, by monotypy; preoccupied by *Tanyptera* Latreille, 1804.

Pteroteinon Watson, 1893: 124. Type-species: *Hesperia laufella* Hewitson, by original designation.

Three of the species credited to this genus occur in Liberia and two others may one day be found there. A sixth species, *P. capronnieri* (Plötz, 1879b: 353 [Camëroon]), has been taken as far west as Ghana (Evans, 1937: 152) and could be found in Liberia, although it was not recorded from Guinea or Ivory Coast in Berger's (1962) comprehensive list. The status of the seventh species, *P. ceucaenira* (H. H. Druce, 1910b: 378 [Upper Kasai dist., Congo]), is somewhat in doubt and will be discussed under *caenira* (Hewitson).

Pteroteinon laufella (Hewitson) (Fig. 101, ♂ genitalia)

Hesperia laufella Hewitson, 1867 [1856-1876], 4: [110]; pl. [58]; figs. 28-30 (Old Calabar, Nigeria).

This attractive hesperiid is recorded from Sierra Leone and Guinea to Angola and east into the Congo (Evans, 1937: 152).

Liberia: no data, 1 ♂ (Evans, 1937: 152); Harbel, 1 ♂, V, 1 ♂, X; Ganta, 1 ♀, VI; Wanau Forest, 1 ♂, III (Fox).

There are also specimens from Cameroon, Gabon and the Congo at Carnegie Museum.

Pteroteinon iricolor (Holland) (Fig. 102, ♂ genitalia)

Proteides iricolor Holland, 1890b: 156 (Ogove).

This apparently uncommon species has been recorded from scattered localities from Sierra Leone to Gabon and the Congo. The dates on the Liberian specimens indicate that the species flies just prior to the rainy season, when most of the butterfly species have passed

their peak numbers and when fewer collectors are in the field.

The first records for Liberia are: Harbel, 2 ♂, IV, 1 ♂, V (Fox).

In addition to the above specimens, the collection at Carnegie Museum contains the type from Gabon and a single specimen from Cameroon.

[**Pteroteinon laterculus** (Holland)]

Proteides laterculus Holland, 1890b: 156 (Ogove).

Evans (1937: 152) records this species from Ivory Coast to Gabon and the Congo, but *laterculus* has not been taken in Liberia. It may be expected to occur here — at least in the eastern part of the country.

Pteroteinon caenira (Hewitson) (Fig. 103, ♂ genitalia)

Hesperia caenira Hewitson, 1867 [1856-1876], 4: [107]; pl. [57], figs. 15, 16 (Old Calabar, Nigeria).
=*Hesperia calpis* Plötz, 1879b: 354 (Eningo).

As mentioned in the generic discussion, the status of *P. ceucaenira* (H. H. Druce) is very much in doubt. Several specimens in the Carnegie Museum collection fit Druce's description and Evans' (1937: pl. 6, fig. 98) figure. Genitalic dissections of these specimens and others referable to *caenira* show there is a wide range of genitalic configurations, not correlated with pattern characteristics, encompassing Evans' (1937: pl. 25) figures of the genitalia of both species. It appears, therefore, that *caenira* may be a highly variable species, and *ceucaenira* merely a junior synonym of it. Since we have seen neither the type of the latter nor its genitalia, we hesitate to sink, summarily, *ceucaenira*.

Evans (1937: 152) records *caenira* from Guinea to Gabon and east through the Congo to Uganda. In addition to the Liberian specimens listed below, there are specimens in Carnegie Museum from Sierra Leone, Ghana, Cameroon, Gabon and Uganda.

Liberia: Fish Lake, 1 ♀, XII (this specimen is atypical, with spots of the forewing much larger than in other Liberian females): Harbel, 1 ♂, 1 ♀, III, 1 ♂, VI, 1 ♂, XI, 1 ♂, XII; Zorzor, 2 ♂, XI; Ganta, 1 ♂, III; Wanau Forest, 1 ♂, X (Fox).

[**Pteroteinon pruna reali** Berger]

Pteroteinon pruna reali Berger, 1962: 458 (Adiopodoume, Ivory Coast).

We have seen specimens of neither this subspecies nor the nominate one from Cameroon, but it should certainly be expected, at least in the eastern part of Liberia.

Genus **CAENIDES** Holland

Caenides Holland, 1896: 85. Type-species: *Hesperia dacela* Hewitson, designated by Lindsey, 1925: 31.
=*Leona* Evans, 1937: 153. Type-species: *Hesperia leonora* Plötz, by original designation.

In the description of *Leona* Evans (1937: 153) separates it from *Caenides* "by the facies and the antennae which are white or ochreous above." The facies of the species he includes in *Leona* fit well with those shown by members of what he considers *Caenides* and the different colored antennae are due only to the presence of white or ochreous scales on the upper surface of the club, rather than brown as in typical *Caenides.* Morphologically the antennae of both groups are similar and in other respects, such as wing venation and the configuration of the legs, his genera are inseparable; the male genitalia show similarities across "generic" lines. For these reasons we do not consider *Leona* worthy of retention.

Caenides may be broken into two species groups which partially but not entirely approximate Evans' generic divisions. The *dacela* group contains those species with a hair tuft present on the upper surface of the hind wing between veins M_3 and Cu_2; those species which lack this tuft fall into the *leonora* group. The presence or absence of a brand on the upper surface of the forewing is erratically shown in both groups, hence is characteristic of neither.

Eighteen species are included in this genus, the majority of which are Guinean, although some range as far east as South Sudan, Kenya and Nyasaland. Seven species are known from Liberia and another four may be expected there.

The **dacela** group

These species are characterized by the hair tuft on the upper surface of the hindwing between veins M_3 and Cu_2. There are six species in the group, five of which occur or may be found to occur in Liberia.

Caenides soritia (Hewitson) (Fig. 104, ♂ genitalia)

Hesperia soritia Hewitson, 1876: 453 (Gabon).
=*Proteides xantho* Mabille, 1891: 111 (Cameroon).

Evans (1937: 158) records *soritia* from Sierra Leone to Gabon and a single record from Nyasaland.

Liberia, presumably the first record: Harbel, 1 ♂, II; Wanau Forest, 1 ♂, I (Fox).

The Liberian specimens are a bit smaller than other specimens in Carnegie Museum from Cameroon and Gabon, but the male genitalia are identical and there is no doubt as to their identity. More material from Liberia would show whether or not there is distinct, smaller Occidental African subspecies of *soritia*, but there is insufficient material for comparison at this time.

Caenides dacela (Hewitson) (Fig. 105, ♂ genitalia)

Hesperia dacela Hewitson, 1876: 451 (Fernando Po).
=*Hesperia nydia* Plötz, 1879b: 353 (Eningo).

This skipper is recorded by Evans (1937: 158-159) from Gambia and Guinea to Fernando Po and Gabon and east through the Congo to Uganda.

Liberia: no data, 1 ♂ (Evans, 1937: 158); River Cess, 1 ♂ (Naysmith); Harbel, 1 ♂, V; Zorzor, 1 ♂, 1 ♀, XI; Ganta, 1 ♂, VII; Wanau Forest, 1 ♂, III, 1 ♀, X; Yendamalahoun, 1 ♂, IV (Fox).

The remainder of the series in Carnegie Museum is from Cameroon, Rio Muni, Gabon and Uganda.

[**Caenides xychus** (Mabille)]

Proteides xychus Mabille, 1891: 111 (Sierra Leone).
=*Caenides kangvensis* ab. *"feminina"* Strand, 1912c: 55 (Cameroon).

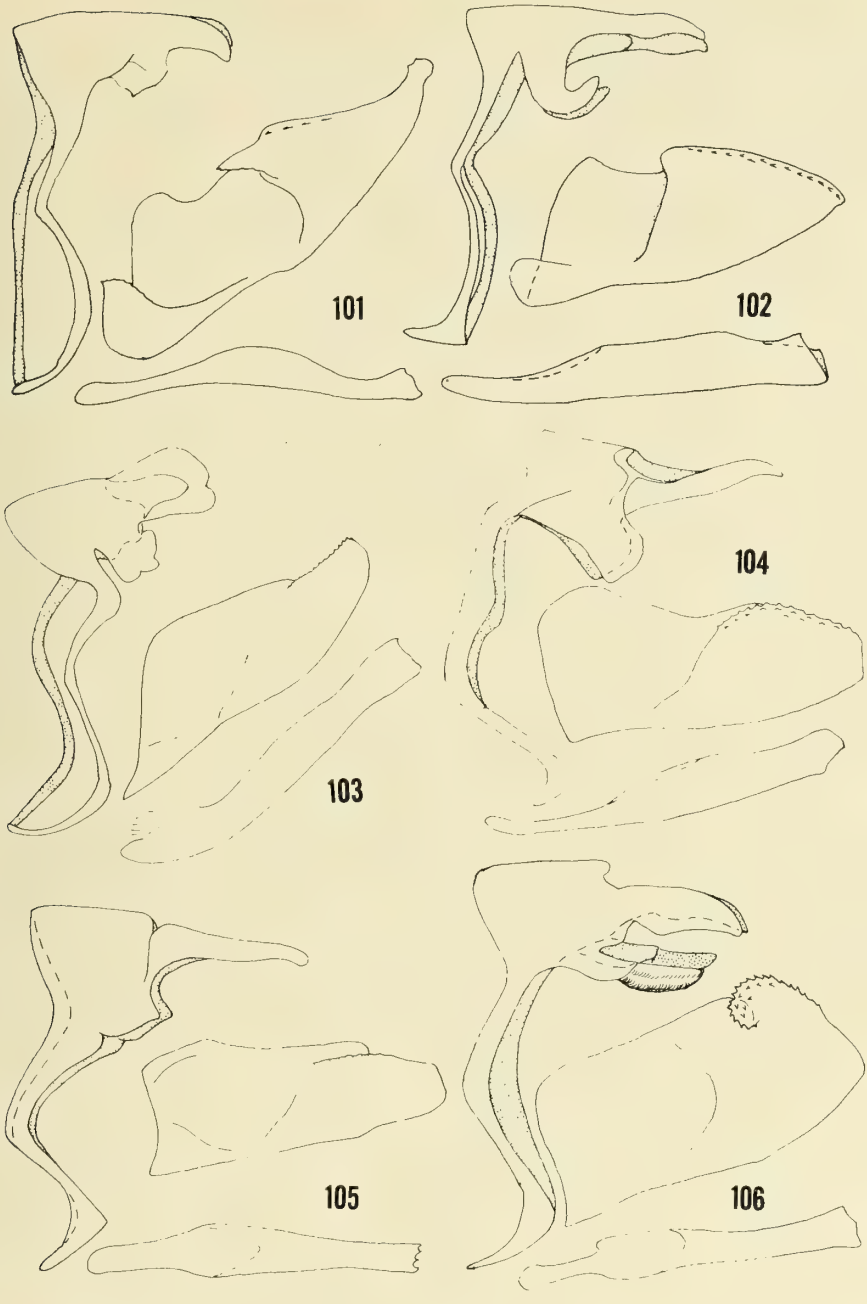
Not yet recorded from Liberia, *xychus* should be expected there since Evans (1937: 159) records it from Sierra Leone and Ghana as well as from Cameroon and Congo. There are specimens from Cameroon and Rio Muni in Carnegie Museum.

[**Caenides kangvensis** Holland]

Caenides kangvensis Holland, 1896: 87; pl. 1, fig. 10 (Kangwe, Ogove River, Gabon).

This species is included as a likely member of the Liberian fauna on the strength of a record from Ivory Coast (Berger, 1962: 459).

Figures 101-106, ♂ genitalia. Fig. 101, *Pteroteinon laufella*, Harbel, Liberia. Fig. 102, *P. iricolor*, Harbel, Liberia. Fig. 103, *P. caenira*, Harbel, Liberia. Fig. 104, *Caenides soritia*, Harbel, Liberia. Fig. 105, *C. dacela*, River Cess, Liberia. Fig. 106, *C. na*, new species, Holotype.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Previously it had been reported from no further west than Ghana (Evans, 1937: 159).

Caenides benga (Holland)

Proteides benga Holland, 1891a: 4 (Ogove).

Evans (1937: 159) lists specimens from Cameroon and Gabon and Carnegie Museum has the type and other specimens from the latter country.

A new record from Liberia is: Harbel, 1 ♀, III (Fox).

This Liberian specimen represents a dramatic extension of the known range of *benga*. The specimen is comparable in all respects with a female from Gabon.

The **leonora** group

This group is characterized by the absence of the hair tuft on the upper surface of the hindwing. Of the twelve species in the group, six occur or may occur in Liberia.

[**Caenides dacena** (Hewitson)]

Hesperia dacena Hewitson, 1876: 453 (Gabon).
=*Hesperia corduba* Hewitson, 1876: 454 (Gabon).
=*Proteides leucopogon* Mabille, 1891: 111 (Cameroon).
=*Proteides massiva* Mabille and Vuillot, 1891 [1890-1893]: 21 (Sierra Leone).

Picard's (1950: 627) erroneous citation of *dacena* was the result of a typographic error in quoting Evans' (1937: 158) record of *dacela*. So far unrecorded from Liberia, *dacena* is to be expected from there since Evans (1937: 159) lists specimens from Sierra Leone and Ghana, and Berger (1962: 459) records it from Ivory Coast. The series of *dacena* in Carnegie Museum contains specimens from Cameroon, Rio Muni, Gabon and Uganda.

Caenides hidarioides Aurivillius

Caenides hidarioides Aurivillius, 1896: 287; fig. 18 (Cameroon).
=*Caenides artopta* H. H. Druce, 1910b: 377; pl. 35, fig. 13 (Upper Kasai dist., Congo).

In addition to the type localities of the two names, Evans (1937: 160) records the rare *C. hidarioides* from Sierra Leone and Ghana.

Liberia: Diyala, 1 ♂ (Picard, 1950: 626).

Caenides na, new species (Fig. 106, ♂ genitalia)

This species is described from a single, very ragged specimen. Unfortunate as the condition of the specimen is, the male genitalia are so distinctive that it cannot be confused with any other member of the genus.

Male. — The upper surface is dark brown, apparently devoid of any maculation, unless there are subapical spots: this area it too worn to show such markings, if present. There is no brand on the upper surface of the forewing, showing its affinity to *dacena,* and the absence of a hair tuft on the upper side of the hindwing separates it from the *dacela* group. The under surface is brown overscaled marginad with yellow on both wings, and there is a small white spot at the end of the cell on the forewing.

The male genitalia show affinities to those of *leonora* (Plötz), and to a lesser degree to those of *stoehri* (Karsch). The uncus is closer to that of the former species but the terminal end is free and the gnathos is more ornate. The valva, distinct from that of either species, is characterized by the terminal lobe being bent dorsally and anteriad and is not to be confused with the broad, square-cut terminal lobe shown in *stoehri;* it is definitely not the infolded terminal portion of the valva of *leonora,* which is short and blunt rather than produced anteriad, as in the other two species.

Described from a single male in the collection of Carnegie Museum (C. M. Entomology Type No. 507).

Holotype ♂. — Yendamalahoun, Liberia, 30 mi. west of Voinjima; 27-IV-1958; R. M. Fox; ♂ genitalic slide no. M-115 (Lee D. Miller).

The term "na" in Bassa means "devil" and is used as a greeting by young men.

It is difficult, owing to the condition of the type specimen, to place *na* in its proper position in the genus, but its superficial similarity to *dacena* is unquestionably overshadowed by its genitalic similarities to *leonora* and *stoehri.* Evidently any light marking which may be present are quite small as in *dacena,* but they may well be yellow as in the other two species, not translucent as in *dacena.*

Caenides leonora leonora (Plötz) (Fig. 107, ♂ genitalia)

Hesperia leonora Plötz, 1879b: 355 (Cameroon).
=*Proteides xanthargyra* Mabille, 1891: 112 (Accra [Ghana]).

The Liberian specimen listed below was taken at light and there is a note on one of the specimens from Metet, Cameroon, in Carnegie Museum saying, "crepuscular habits". From this information it appears that this species flies chiefly at times when butterfly collectors are

not in the field, probably accounting for the wide gaps in its distribution.

C. leonora is recorded from Sierra Leone to Cameroon and east into Uganda as the nominate subspecies, whereas *C. l. dux* (Evans, 1937: 155) is known from the Congo and Nyasaland.

The first Liberian record is: Harbel, 1 ♂, X, at light (Fox).

There are also a few specimens from Cameroon, Rio Muni and Gabon in Carnegie Museum.

Caenides stoehri stoehri (Karsch) (Fig. 108, ♂ genitalia)

Pamphila stoehri Karsch, 1893: 252; pl. 6, fig. 6 (Togo).
=*Caenides meloui* Riley, 1926: 50 (Ivory Coast).

This species is apparently quite rare but widely distributed. The nominate subspecies has been recorded from Ivory Coast to Cameroon and the Congo.

Liberia, apparently the first record: between Yendamalahoun and Voinjima, 1 ♂, IV (Fox).

There is one other specimen in Carnegie Museum from Cameroon, indistinguishable in all respects from the Liberian one.

[**Caenides luehderi luehderi** (Plötz)]

Plastingia luehderi Plötz, 1879b: 357 (Aburi).
=*Caenides* (?) *alenicola* Strand, 1912c: 56 (Alen, Cameroon).
=*Caenides umbrina* Rebel, 1914: 275; pl. 22, figs. 45, 47 (Moera, Tanganyika).

Evans (1937: 156) records the nominate subspecies from Sierra Leone and Cameroon and there are specimens from the latter country in Carnegie Museum. *C. l. luehderi,* which is not common, should be sought in Liberia although it has not yet been recorded from there.

Genus **MONZA** Evans

Monza Evans, 1937: 160. Type-species: *Goniloba cretacea* Snellen, by original designation.

The two species assigned to this genus by Evans (1937: 160-162) have both been recorded from Liberia. The members of the genus are both unusual: *alberti* (Holland) shows great diversity in the configuration of the male genitalia and in facies, and *cretacea* (Snellen) has been broken into a bewildering number of "subspecies" and "forms", several of which may prove to be separate species. The male genitalia of both species show asymmetrical valvae.

Monza alberti (Holland) (Figs. 109, 110, 111, 112, 113, 114, ♂ genitalia)

Baoris alberti Holland, 1896: 67; pl. 2, fig. 21 (Ogove).
=*Parnara entebbea* Swinhoe, 1909: 90 (Entebbe, Uganda).
=*Baoris alberti* ab. *"bibundicana"* Strand, 1912c: 51 (Cameroon).
=*Baoris alberti* ab. *"alenicola"* Strand, 1912c: 51 (Alen, Cameroon).

M. alberti shows a surprising degree of variability, not only superficially but also in the configuration of the valvae of the male genitalia. These asymmetrical valvae fall into a number of patterns apparently uncorrelated with either differences in facies or geographic distribution. A few of the variations in the valvae are shown in our figures.

This highly variable species is found from Sierra Leone to Gabon and east as far as Kenya. There are specimens in Carnegie Museum from almost all the known range of *alberti*.

Liberia: no data, 4 ♂ (Evans, 1937: 160); Tchien, 1 ♂, IV; Penoke, 1 ♀ (Picard, 1950: 627); Harbel, 1 ♂, II, 1 ♂, X, 1 ♂, XI; Zorzor, 1 ♂, XI; Gbanga, 1 ♀, VII; Ganta, 1 ♀, V, 5 ♂, 4 ♀, VI, 2 ♂, 1 ♀, VII, 1 ♂, 1 ♀, IX, 1 ♂, X; Kpain, 1 ♀, V (all Fox).

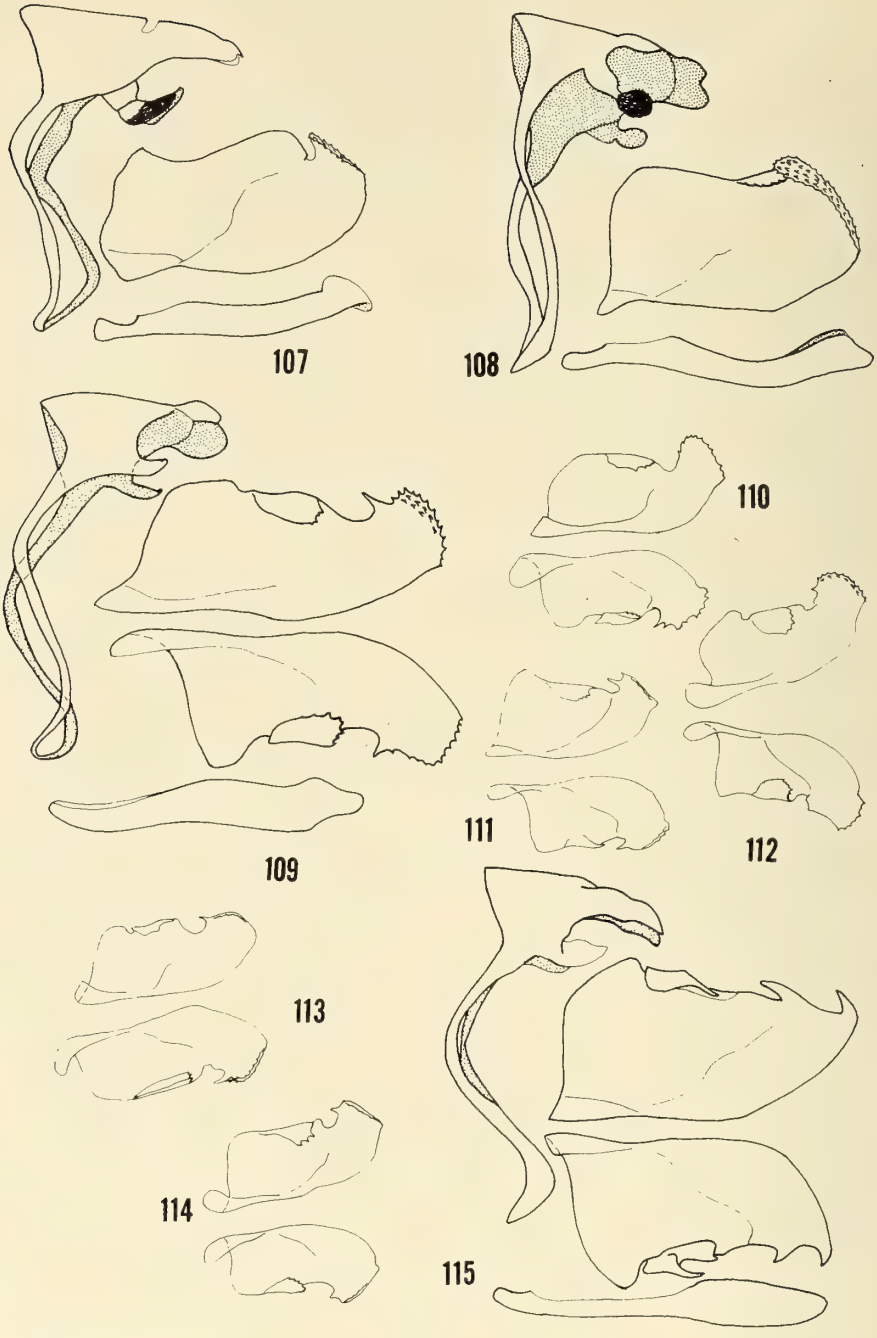
Monza cretacea cretacea (Snellen) (Fig. 115, ♂ genitalia)

Goniloba cretacea Snellen, 1872: 27; pl. 2, figs. 4-6 (Guinea).
=*Hesperia gonessa* Hewitson, 1877a: 76 (Angola).
=*Pamphila leucosoma* Mabille, 1877d: 114 (W. Africa).
=*Pamphila camerona* Plötz, 1879b: 356 (Cameroon).
=*Hypoleucis cretacea ploetziana* Strand, 1920a: 155 (Cameroon).
=*Acleros oldenburghi* Neustetter, 1927a: 61 (Cameroon).

As may be inferred from the number of synonyms, *cretacea* is a variable species, superficially and genitalically. The configuration of the right valva is remarkably constant but almost no two specimens have similar left valvae. The variation of the configuration of the genitalia is, as in the last species, totally unrelated to the superficial variation.

Evans (1955: 884) points up one of the difficulties in *cretacea* when he cites a letter from T. H. E. Jackson, an excellent field man,

Figures 107-115, ♂ genitalia. Fig. 107, *Caenides l. leonora,* Harbel, Liberia. Fig. 108, *C. s. stoehri,* between Yendamalahoun and Voinjima, Liberia. Fig. 109, *Monza alberti,* Ganta, Liberia. Figs. 110-114, *M. alberti,* paired valvae of five specimens from Efulen, Cameroon, illustrating the variation in valval configurations within a single population (note: these valvae are comparable in size with those in Fig. 109, but are reduced for convenience). Fig. 115, *M. cretacea,* Bigtown, Liberia.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who contended that *cretacea* and *crola* Evans (1937: 162 [Uganda]) were separate species since they fly together and do not interbreed. In all probability Jackson is correct, but there is too little material before us of all the known subspecies to enable us to determine what is a distinct species and what is not, so we must leave all material in *cretacea* at present.

The nominate subspecies (the others are Central and East African) is recorded by Evans (1937: 161) from Guinea and Sierra Leone to Angola and east to Uganda. There are specimens in Carnegie Museum from most of this range, as well as representatives of some of the East African entities.

Liberia: no data, 1 ♂ (Evans, 1937: 161); Bigtown, 1 ♂ (Naysmith).

Genus MELPHINA Evans

Melphina Evans, 1937: 162. Type-species: *Parnara melphis* Holland, by original designation.

Nine species belong to *Melphina*, four of which have been recorded from Liberia and three others are to be expected there. The arrangement of the genus is the same as that of Evans (1937: 162-164), but the status of some of the entities is not, and a superficial key to the species is given below.

Superficial Key to the Species of Melphina Evans

1. Upper surface unmarked black, fringes white; Cameroon to Uganda ..... *noctula* (Druce)
   Upper surface, at least of forewings, with light markings 2
2. Forewing with two separate cell spots 3
   Forewing with no, one, or two conjoined cell spots 6
3. Spots of hindwing upper surface clear white; Sierra Leone to Gabon and east into Uganda ..... *unistriga* (Holland)
   Spots of hindwing upper surface, at least, tinged with yellow 4
4. Hindwing under surface with prominent white extradiscal spots; Sierra Leone to Cameroon ..... *tarace* (Mabille)
   Hindwing under surface without white extradiscal spots 5
5. Hindwing under surface with broad chocolate border (greater than 3 mm.); Liberia to Rio Muni ..... *statirides* (Holland)
   Hindwing under surface with narrow chocolate border (about 2 mm.); Sierra Leone to Nigeria and east to Uganda [not seen, taken from Evans, 1937: 164] ..... *flavina* Evans
6. Forewing cell spot absent; Sierra Leone to Gabon ..... *melphis* (Holland)
   Forewing cell spot(s) present 7

7. Forewing cell spots fused, lower element reduced, giving appearance of a single triangular spot; hindwing above with only two obscure extradiscal spots; at least Cameroon ..... *argyrodes* (Holland)
   Forewing cell spots obviously double, conjoined; hindwing above with at least four prominent extradiscal spots 8
8. Hindwing upper surface with a broad pale extradiscal band; Sierra Leone to Cameroon ..... *malthina* (Hewitson)
   Hindwing upper surface with separate spots in a narrow extradiscal band; Sierra Leone to Nigeria ..... *statira* (Mabille)

The above key does not consider the "forms" of *malthina, "eala"* and *"hulstaerti"*, described by Evans (1955: 885). These entities were described from female types and we do not know them at all. They may also represent separate species, but male specimens are needed before such a decision can be made.

None of the species of *Melphina* appears to be common.

The **tarace** group

Evans (1937: 163-164) considered the next four species as forms of *M. tarace*, stating, "Apparently a species occurring in the same area in 4 forms with identical uppersides and genitalia, but different undersides." In the case of *unistriga, tarace,* and *statirides* (we do not have *flavina* for study) this is not so. The upper surface of *unistriga,* as pointed out in the key, is unlike that of the other three species and the male genitalia of the three species examined are sufficiently different to warrant their consideration as separate species. We also believe *flavina* is entitled to full specific status and so consider it, pending examination of specimens. Our figures of the male genitalia of the three species available for study will suffice to separate them.

We are not the first to consider these as full species. Evans (1955: 884) cites a letter from Jackson in which he considers *unistriga, tarace,* and *flavina* as full species since they fly together, are easily separable, and produce no intergrades, but Evans dismissed this as a case of polymorphism. Hence, in effect, we are following Jackson.

Melphina unistriga (Holland) (Fig. 116, ♂ genitalia)

Parnara unistriga Holland, 1894a: 30; pl. 1, figs. 13, 14 (Ogove).

The male genitalia are separable from those of *tarace* and *statirides* in that the proximal part of the valva is about twice as broad as is the

distal lobe. In the other two species the proximal part is less than twice as broad as the distal lobe.

Evans (1937: 163) gives the range as Sierra Leone to Cameroon and east through the Congo to Uganda. There are specimens from Cameroon, Rio Muni and Gabon in Carnegie Museum, in addition to the Liberian records that follow. This species is evidently the commonest of the *tarace* group.

Apparently the first Liberian records are: Liberia, 2 ♂, 1 ♀ (A. C. Good); Harbel, 1 ♂, 1 ♀, V, 1 ♂, XI; Ganta, 1 ♂, IX; Yendamalahoun, 1 ♂, IV (all Fox).

[**Melphina tarace** (Mabille)] (Fig. 117, ♂ genitalia)

Pamphila tarace Mabille, 1891: 179 (Sierra Leone).

The male genitalia have been separated from those of the preceding species in the discussion of it. From *statirides* this species may be separated by the form of the dorsal distal process of the valva, which is pointed and extends above the dorsal margin of the valva in the present species, but is rounded and does not extend above the dorsal margin of the valva in *statirides.*

So far *tarace* has not been taken in Liberia but it is to be expected there since Evans (1937: 164) records it from Sierra Leone, Nigeria and Cameroon. There are specimens from the last country in Carnegie Museum and one of these was dissected for our genitalic figure.

[**Melphina flavina** Evans]

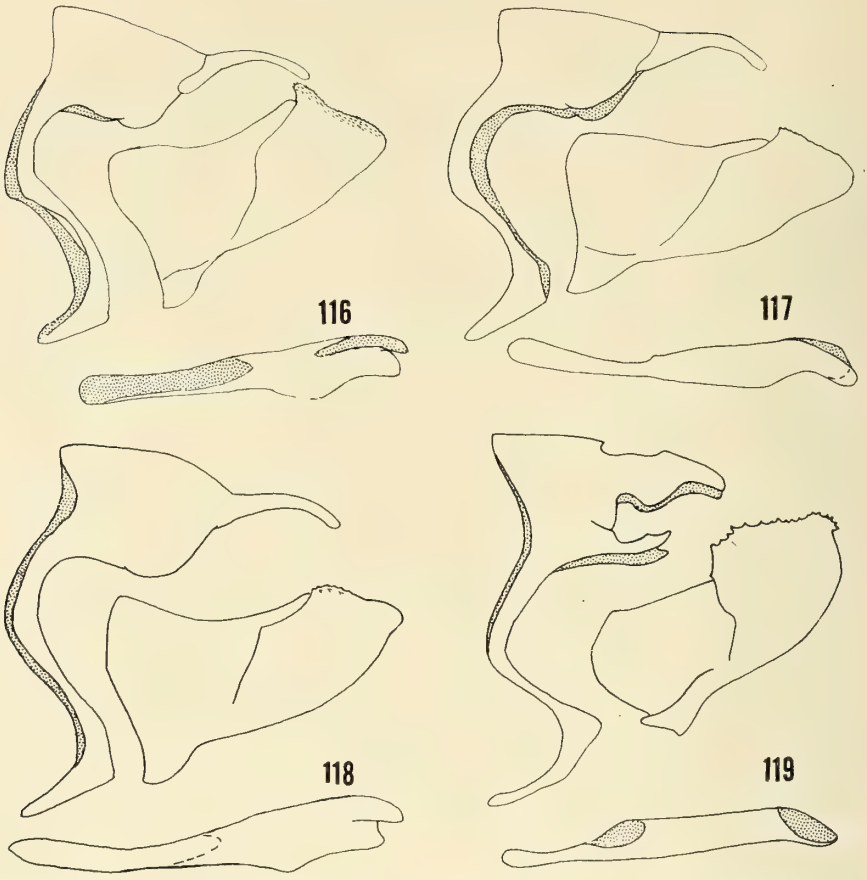
Melphina tarace f. *flavina* Evans, 1937: 164 (Budongo Forest, Unyoro, Uganda).

We have not seen his species but have given it specific status pending the opportunity of examining material based on Jackson's comments, cited above, on it and other members of the *tarace* group.

M. flavina has not been collected as yet in Liberia but it almost certainly occurs there since Evans (1937: 164) records it from Sierra Leone, Ivory Coast, Nigeria and Uganda.

Melphina statirides (Holland) (Fig. 118, ♂ genitalia)

Baoris statirides Holland, 1896: 69; pl. 5, fig. 6 (Ogove).
=*Parnara flavifasciola* H. H. Druce, 1909: 412; pl. 67, fig. 9 (Bitje, Ja River, Cameroon).



Figures 116-119, ♂ genitalia. Fig. 116, *Melphina unistriga,* Yendamalahoun, Liberia. Fig. 117, *M. tarace,* Batanga, Cameroon. Fig. 118, *M. statirides,* Benito [Rio Muni]. Fig. 119, *M. malthina,* Fish Lake, Liberia.

The genitalic differences which characterize this species have been noted under *unistriga* and *tarace*. Our genitalic figure is from a Cameroon specimen. Evans (1937: 164) mentions specimens from Nigeria and Cameroon and there are several specimens in Carnegie Museum from Cameroon and Rio Muni. The type specimen from Gabon is in the Staudinger Collection at Berlin.

The first record from Liberia is: Harbel, 1 ♀, I (Fox).

[**Melphina melphis** (Holland)

Parnara melphis Holland, 1894a: 31; pl. 1, fig. 18 (Ogove).

This species is represented in Carnegie Museum only by the type, which is a male, not a female as cited in the original description and by Evans (1937: 164). The latter author cites specimens from Sierra Leone, Nigeria and Ivory Coast, suggesting that *melphis* may be a resident of Liberia though it is unrecorded to date.

? **Melphina statira** (Mabille) (Figs. 120, 121, ♀)

Pamphila statira Mabille, 1891: 180 (Sierra Leone).

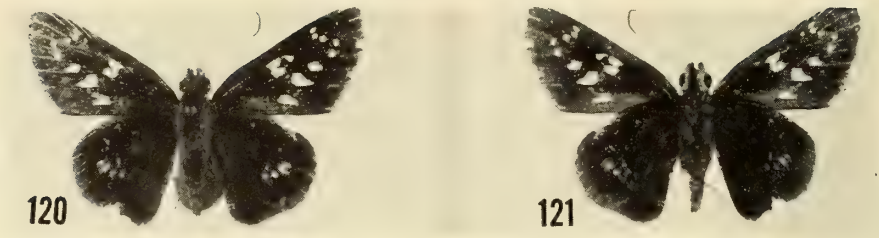
In view of the rather striking lack of sexual dimorphism within the genus it seems inadvisable to follow Evans' (1937: 164) lead in synonymizing *argyrodes* (Holland, 1894b: 93; pl. 3, fig. 11 [Ogove], as *Parnara a.*) with the present species. *M. argyrodes* is well characterized in our key and is totally unlike any specimens or figures of *statira* we have seen. The male genitalia of the type of *argyrodes* coincide with Evans' (1937: 27) figure of those of *statira,* but fine detail is seldom obtainable from his plates. A similar situation may exist with *argyrodes* and *statira,* as is shown in the *tarace* group. In view of this, it seems advisable to retain *argyrodes* as a species separate from, but close to *statira.*

A single Liberian specimen, perhaps the first record for the country and the only specimen in Carnegie Museum, is tentatively assigned to this species. It bears the following data: Harbel, 1 ♀, I (Fox).

There are no other specimens in the Museum, so a comparison was necessary with the figure given by Mabille and Vuillot (1893 [1890-1893]: pl. 16, fig. 2) of the type specimen. The Liberian specimen differs in the following respects: the cell spots are more definitely divided on the forewing, though still conjoined, as in the type; the spots in spaces Cu_1-Cu_2 and Cu_2-A of the forewing are relatively larger and the hindwing does not have the basal cell spot on the under surface that is prominent in the figure of the type, although the Liberian specimen is a bit worn in that area. Despite the cited differences, it seems best to refer the Liberian specimen to *statira,* but with reservations.

Melphina malthina (Hewitson) (Fig. 119, ♂ genitalia)

Hesperia malthina Hewitson, 1876: 457 (Old Calabar, Nigeria).
=*Pamphila euryspila* Mabille, 1891: 179 (Sierra Leone).
=*Melphina mathina* f. *eala* Evans, 1955: 885 (Congo).
=*Melphina malthina* f. *hulstaerti* Evans, 1955: 885 (Congo).



Figures 120-121, *Melphina statira* (?), ♀. Fig. 120, upper surface. Fig. 121, under surface.

The fact that the status of Evans' two "forms" listed in the synonymy is very much in doubt has been covered in the generic discussion. This species was previously only recorded from Sierra Leone to Nigeria, but there is a specimen in Carnegie Museum from Efulen, Cameroon, which may represent the first record from that country.

Liberia: no data, 3 ♀ (A. C. Good); Fish Lake, 1 ♂, XII (Fox).

Genus **FRESNA** Evans

Fresna Evans, 1937: 164. Type-species: *Hesperia netopha* Hewitson, by original designation.

Of the four species assigned to this genus, one has been reported from Liberia and another almost certainly occurs there. A third species, *F. nyassae* (Hewitson, 1878: 345), has been broken by Evans (1937: 165-166) into a bewildering array of forms, one of which he records from Ghana, suggesting it might be found in Liberia one day. All are probably savanna species.

Fresna netopha (Hewitson)

Hesperia netopha Hewitson, 1878: 345 (West Africa).

This species is recorded from Sierra Leone to Gabon and east to Kenya (Evans, 1937: 165).

The single record from Liberia is: Pata, 1 ♀, XI (Picard, 1950: 626).

[**Fresna cojo** (Karsch)]

Pamphila cojo Karsch, 1893: 250; pl. 6, fig. 7 (Togo).

F. cojo, described from Togo and recorded also from Sierra Leone, Ivory Coast, Nigeria and Kenya (Berger, 1962: 460-461), should be expected in Liberia. It is apparently quite rare, and we have seen no examples of it.

Genus **PLATYLESCHES** Holland

Platylesches Holland, 1896: 72. Type-species: *Parnara* (?) *picanini* Holland, by original designation.

This genus contains seventeen species with rather similar facies, the majority of which are East and Central African. Three species have been definitely recorded from Liberia and another four are expected to be resident.

Platylesches galesa (Hewitson) (Fig. 122, ♂ genitalia)

Pamphila galesa Hewitson, 1877a: 79 (West Africa).
=*Halpe nigerrima* Butler, 1893: 672 (Zomba).
=*Platylesches nigricans* Holland, 1896: 73; pl. 2, fig. 12 (Sierra Leone).
=*Platylesches depygata* Strand, 1920: 163 (Nyasaland).

The West African material at hand does not show the individual variation cited by Evans (1937: 168). This is a widely distributed species, being recorded from Sierra Leone to Cameroon and east to Tanganyika and Mozambique (Evans, 1937: 168).

The following records are apparently the first published from Liberia: Harbel, 4 ♂, 1 ♀, I, 3 ♂, 1 ♀, II, 5 ♂, IV, 8 ♂, V, 2 ♂, 1 ♀, X; Ganta, 2 ♂, VI; Wanau Forest, 2 ♀, I, 1 ♂, VI (Fox).

In addition to the Liberian specimens there are also examples from Sierra Leone (the type of *nigricans*), Cameroon and Rio Muni in the collection of Carnegie Museum.

[**Platylesches moritili** (Wallengren)]

Hesperia moritili Wallengren, 1857: 49 (Kaffraria).
=*Apaustus zephora* Plötz, 1884c: 156 (Angola).
=*Pamphila heterophyla* Mabille, 1891: 178 (Natal).
=*Pamphila amadhu* Mabille, 1891: 178 (Transvaal).
=*Platylesches moritili costalis* Aurivillius, 1925 [1908-1925]: 523 (Congo).

This widespread species has thus far escaped detection in Liberia but it is to be expected there. Evans (1937: 170) records it from Guinea and Sierra Leone east to Kenya and south to the Union of South Africa; Berger (1962: 461) lists it from Ivory Coast. There are specimens from Angola, Rhodesia, Nyasaland and Natal in Carnegie Museum.

Platylesches picanini (Holland) (Fig. 123, ♂ genitalia)

Parnara (?) *picanini* Holland, 1894b: 91; pl. 3, fig. 9 (Liberia).
=*Pamphila grandiplaga* Mabille, 1891: 179 (ms. name only).
=*Platylesches goetzi* Grünberg, 1907: 578 (Tanganyika).
=*Platylesches junodi* Oberthür, 1909: 93; pl. 10, fig. 4 (Mpala, Congo).

Evans (1937: 171) records *picanini* from Sierra Leona and Guinea to Cameroon and east to Tanganyika and Mashonaland.

Liberia: no data, 1 ♂ (A. C. Good; holotype of *picanini*); Harbel, 2 ♂, V (Fox).

There is also a single specimen from Batanga, Cameroon, in Carnegie Museum.

[**Platylesches affinissima** Strand]

Platylesches affinissima Strand, 1920: 164 (Sierra Leone).

Described from neighboring Sierra Leone, *affinissima* should be sought in Liberia but it is unrecorded to date. Evans' (1937: 172) records from Gambia, Sierra Leone and Nyasaland suggest that it may be a savanna species.

Platylesches chamaeleon chamaeleon (Mabille) (Fig. 124, ♂ genitalia)

Pamphila chamaeleon Mabille, 1891: 179 (Sierra Leone).

The nominate subspecies is known from Sierra Leone to Nigeria and the subspecies *tero* Evans (1937: 172) is known only from the type locality, Tero Forest, W. Ankole, Uganda.

Apparently the first Liberian record is: Harbel, 3 ♂, I, 5 ♂, II, 2 ♂, III, 7 ♂, 2 ♀, V, 2 ♂, IX, 2 ♂, XI; Ganta, 1 ♂, 1 ♀, II, 1 ♂, V; Wanau Forest, 1 ♂, V, 1 ♂, VI (Fox).

[**Platylesches batangae** (Holland)]

Parnara batangae Holland, 1894b: 92; pl. 3, fig. 10 (Batanga, Cameroon).

Evans (1937: 172) lists specimens from Sierra Leone and the Congo; Carnegie Museum has the type and others from Cameroon. Thus far *batangae* has not been recorded from Liberia but its presence there is to be expected.

[Platylesches iva Evans]

Platylesches iva Evans, 1937: 172; pl. 7, fig. 102 (Ivory Coast).

Described from a single specimen taken in Ivory Coast and recorded from that country again by Berger (1962: 461), this species is expected to occur in Liberia, at least in the eastern part of the country. We have seen no specimens of *iva*.

Genus **PELOPIDAS** Walker

Pelopidas Walker, 1870: 56. Type-species: *Pelopidas midea* Walker (=*thrax*), by monotypy.
=*Chapra* Moore, 1881: 169. Type-species: *Hesperia mathias* Fabricius, by original designation.

Of the African species listed by Evans (1937: 178-185) under *Pelopidas,* he restricted (1949: 44) the name to the two which bear brands on the upper surface of the forewing. The other species which he included (1937) in the genera *Baoris* and *Pelopidas* he later placed (1949) into the next genus. One of the two species of *Pelopidas* as now defined is definitely known from Liberia and the other almost certainly occurs there.

Pelopidas mathias (Fabricius)

Hesperia mathias Fabricius, 1798: 433 (India).
=*Gegenes elegans* Mabille, 1877c: 232 (no locality cited, but Evans, 1937: 180, states that the type is from Madagascar).
=*Pamphila umbrata* Butler, 1879a: 191 (Isle of Johanna).
=*Pamphila octofenestrata* Saalmuller, 1884: 108 (Madagascar).
=*Pamphila albirostris* Mabille, 1887 [1885-1887]: 361 (Madagascar).

In addition to the above names there is an extensive Indo-Australian synonymy (see Evans, 1949: 441-442). In various forms *mathias* occurs throughout the Old World tropics from Africa to Japan, Korea and New Guinea.

The following is the first definite record of this species from Liberia: Zorzor, 1 ♂, XI (Fox).

There are also African specimens in Carnegie Museum from Senegal, Cameroon, Gabon, Uganda, Kenya, South Africa (Natal, Transvaal) and Madagascar.

[**Pelopidas thrax inconspicua** (Bertolini)]

Hesperia inconspicua Bertolini, 1850: 179 (Mozambique).
=*Hesperia mohopaani* Wallengren, 1857: 48 (Kaffraria).
=*Pamphila micispa* Trimen, 1862a: 290 (Knysa, South Africa).
=*Pamphila lodra* Plötz, 1879b: 355 (Eningo).

This is the subspecies found throughout Africa south of the Sahara. Evans (1937: 180) mentions many specimens from "Sierra Leone to Cameroons" and Berger (1962: 463) records it from Guinea; even though it has not been taken in Liberia to date, *P. thrax inconspicua* should occur there. It is probably a savanna species.

Genus **BORBO** Evans

Borbo Evans, 1949: 44. Type-species: *Hesperia borbonica* Boisduval, by original designation.

This genus contains all the species assigned by Evans (1937: 175-185) to the genera *Pelopidas* and *Baoris*, with the exception of the two species dealt with in the preceding genus. Of the seventeen species now referred to *Borbo* four have been taken in Liberia but eight others may be expected there. Evans (1951: 1272) divided this group on the basis of mid-tibial spines, and we follow him in the establishment of the *borbonica* and *lugens* species groups.

The **borbonica** group

These species are characterized by having the mid tibiae spined. Of the eleven species included, three have been taken in Liberia and six others are expected there.

Borbo borbonica borbonica (Boisduval)

Hesperia borbonica Boisduval, 1833b: 65; pl. 9, figs. 5, 6 (Bourbon).
=*Parnara senegalensis* Klug, 1842 [1836-1856]: 13 (Senegal).
=*Hesperia zelleri* Lederer, 1855: 194 (Syria).
=*Pamphila morella* Johannis, 1893: 52 (Mahe).
=*Pamphila borbonica holli* Oberthür, 1910: 364 (Hussain Dey, Algeria).
=*Parnara borbonica continentalis* Strand, 1912a: 80 (Tanganyika).

The nominate subspecies is the only one which occurs in Africa south of the Sahara.

Unfortunately, both Liberian males at hand lack their abdomens, so

no comparison of genitalia could be made. Cameroon specimens in Carnegie Museum show similar configuration of the male terminalia to that of the Senegalese specimen figured by Evans (1937: pl. 29). The male genitalia, as he shows, has very different configurations throughout the range, but this is apparently clinal variation.

Liberia: Webo, 1 ♂, II (Picard, 1950: 627); Liberia, 1 ♂ (Naysmith); Harbel, 1 ♀, X, 1 ♀, XII; Wanau Forest, 1 ♂, III (Fox).

We have before us specimens from Nigeria, Cameroon, Rio Muni, Gabon, Congo, Kenya, Nyasaland and Madagascar, in addition to the Liberian ones.

[**Borbo fallax** (Gaede)]

Parnara fallax Gaede, 1916: 126 (Cameroon).

This species is recorded from some (definitely not all) countries from Sierra Leone and Tanganyika southward (Evans, 1937: 181), and Berger (1962: 461) lists specimens from several localities in Guinea and Ivory Coast. It has not been taken in Liberia but *fallax* almost certainly occurs there. Carnegie Museum has specimens from Cameroon and Gabon.

[**Borbo fanta fanta** (Evans)]

Pelopidas fanta Evans, 1937: 181; pl. 7, fig. 109 (Ghana).

In his type series Evans listed specimens from many countries from Sierra Leone to Angola and Congo but none from Liberia, but it is almost certainly there. Berger (1962: 462) records it from Ivory Coast. Carnegie Museum has single specimens of the nominate subspecies from Cameroon and Kenya, indicating this species is very widely distributed.

[**Borbo sirena** (Evans)]

Pelopidas sirena Evans, 1937: 181; pl. 7, fig. 110 (Kenya).

We had not considered *sirena* a possible member of the Liberian fauna since no specimens were known from further west than the Congo until Berger (1962: 462) recorded a female identified as this species from Macenta, Guinea. It must, therefore, be considered a possible member of the Liberian fauna. We have seen no specimens.

Such a record as Berger's serves to dramatize the need for much more collecting throughout Africa in order to determine the ranges of the various species.

[Borbo perobscura (H. H. Druce)]

Parnara perobscura H. H. Druce, 1912: 504 (Addah, West Africa).
=*Parnara gemina* Gaede, 1916: 126 (Cameroon).
=*Parnara gemina* ab. *"trigemina"* Gaede, 1916: 126 (Togo).
=*Parnara detecta karschi* Aurivillius, 1925 [1908-1925]: 537 (Togo).
=*Parnara falarus* Aurivillius, 1925 [1908-1925]: 537 (Mabille ms. name).

Evans (1937: 182) suggests that this rather variable species is common from Sierra Leone to Cameroon and east to Bahr-el-Ghazal, Kenya and Tanganyika, but the series from Gabon in Carnegie Museum does not suggest this. So far it is unrecorded from Liberia, but it is expected to be found there.

Borbo detecta (Trimen)

Pamphila detecta Trimen, 1893: 141; pl. 8, fig. 12 (Natal).
=*Pamphila fallatus* Holland, 1896: 63 (Mabille ms. name).
=*Pamphila pyrrhobaphes* Mabille, 1897: 214 (Tanganyika).
=*Baoris auritinctus* Butler, 1898: 416 (Kenya).

The range of this species given by Evans (1937: 182 — primarily South and East African records) is puzzling since the bulk of material in Carnegie Museum is from Cameroon, Gabon and the Congo, a distribution which validates Holland's (1896: 63) records from the first country. Unless Evans' (1937: 178-179) key to the species is in error in the separation of this species and the last, *detecta* has a far greater range than he ascribes to it. The male genitalia of Cameroon specimens are more like his figure (1937: pl. 29) of the present species than of *perobscura,* but, as is so often true of his figures, there are just enough discrepancies between the specimens and the plates to cause us to wonder.

The first Liberian record: Harbel, 1 ♀, I, 1 ♀, X (Fox).

[Borbo micans (Holland)]

Parnara micans Holland, 1896: 63; pl. 3, fig. 19 (Ogove).

This, the most distinctive species in the genus, has not been recorded from Liberia but it is to be expected since Evans (1937: 182-

183) reports specimens from Sierra Leone and Ghana, and Berger (1962: 462) records it from Ivory Coast. No other *Borbo* has such a golden sheen to the upper surface as *micans,* and if found in Liberia it will be easily recognized.

[**Borbo liana** (Evans)]

Pelopidas liana Evans, 1937: 183; pl. 7, fig. 112 (Sierra Leone).

The type, which is apparently unique, was collected so near Liberia that it is probable *liana* will one day be found in this area.

Borbo holtzii (Plötz)

Hesperia holtzii Plötz, 1883: 44 (Angola).
=*Pamphila aures* Mabille, 1883: 64 (East Africa).
=*Baoris cana* Lathy, 1901: 35; pl. 3, fig. 8 (Zomba).
=*Baoris caesia* Gaede, 1917: 30 (Tanganyika).
=*Baoris aequalis* Gaede, 1917: 31 (Tanganyika).
=*Pelopidas rougeoti* Picard, 1949: 151 (Gabon).

B. holtzii occurs in the region bounded by Sierra Leone, South Sudan, Tanganyika and South Africa (Evans, 1937: 185).

A single Liberian specimen is placed here provisionally owing to its battered condition. It bears the following data: Harbel, 1 ♀, XI (Fox).

Other specimens in Carnegie Museum are from Angola, Rhodesia and Kenya.

The **lugens** group

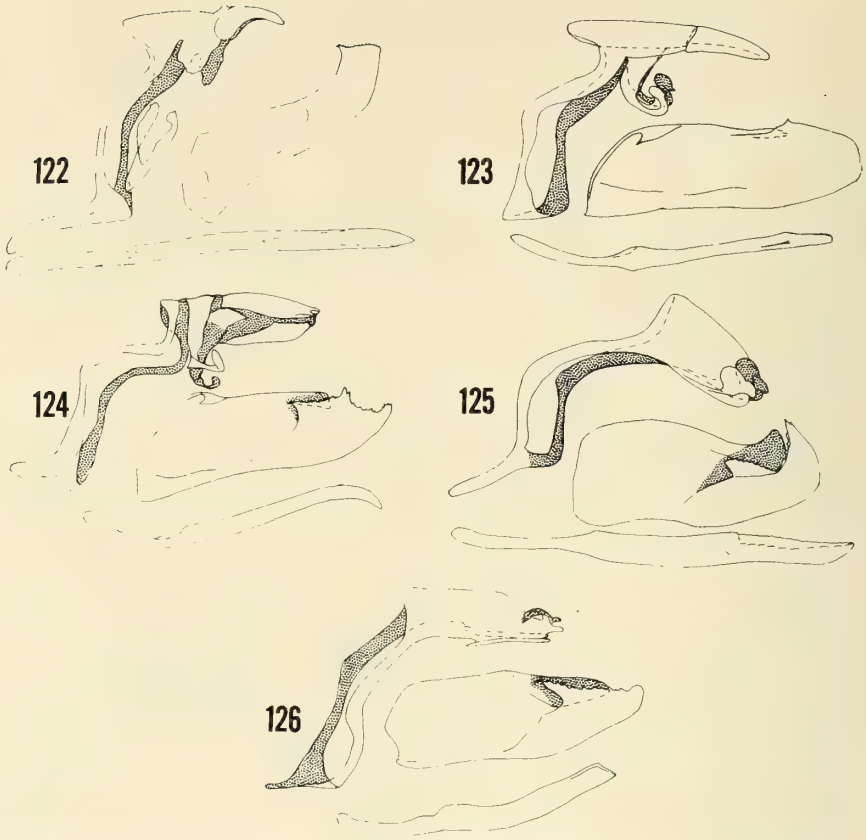
The mid tibiae of these species are unspined. Of the seven species assigned to the group, three either occur or probably occur in Liberia.

Borbo fatuellus fatuellus (Hopffer) (Fig. 125, ♂ genitalia)

Pamphila fatuellus Hopffer, 1855: 643 (Mozambique).
=*Hesperia caffraria* Plötz, 1883: 43 (Kaffraria).
=*Pamphila cinerea* Holland, 1896: 66 (Mabille ms. name).

The nominate subspecies occurs throughout Africa south of the Sahara; other subspecies have been described from nearby islands (Evans, 1937: 177).

Liberia: Cape Palmas, 2 ♂ (Naysmith); Harbel, 2 ♀, III, 1 ♂, VIII, 1 ♀, IX, 1 ♀, XI, 1 ♀, XII; Zorzor, 1 ♂, 1 ♀, XI; Ganta. 1 ♂, VII; Wanau Forest, 1 ♂, X (all Fox).



Figures 122-126, ♂ genitalia. Fig. 122, *Platylesches galesa,* Ganta, Liberia. Fig. 123, *P. picanini,* Harbel, Liberia. Fig. 124, *P. c. chamaeleon,* Harbel, Liberia. Fig. 125, *Borbo f. fatuellus,* Harbel, Liberia. Fig. 126, *Gegenes niso brevicornis,* Harbel, Liberia.

There are also specimens in Carnegie Museum from Cameroon, Rio Muni, Gabon, Angola, Congo, Uganda, Kenya, Tanganyika, Nyasaland, Delagoa Bay and Natal.

[**Borbo binga** (Evans)]

Baoris binga, Evans, 1937: 178; pl. 7, fig. 107 (Ivory Coast).

This skipper was described from two specimens taken in Ivory Coast. Berger (1962: 462) records another specimen from there and one from Congo. These are the only specimens so far known but *binga* should be sought and expected in at least eastern Liberia.

[**Borbo gemella** (Mabille)]

Pamphila gemella Mabille, 1884: 187 (Madagascar).

Although this species is unrecorded from Liberia, it should occur there since Evans (1937: 184-185) records specimens from almost all countries south of the Sahara and Berger (1962: 462) mentions records from Guinea and Ivory Coast. There is another record from Guinea by Condamin (1961: 251). We only have specimens before us from Nyasaland, Transvaal and Madagascar.

Genus **PARNARA** Moore

Parnara Moore, 1881: 166. Type-species: *Eudamus guttatus* Bremer and Gray, by original designation.

This genus, widely distributed throughout the Indo-Australian region, is represented in the African fauna by one species which should be expected in Liberia.

[**Parnara naso monasi** (Trimen)]

Pamphila monasi Trimen, 1889 [1887-1889], 3: 317 (Durban, Natal).
=*Pamphila neoba* Mabille, 1891: 178 (Cameroon).
=*Parnara subochracea* Holland, 1896: 63; pl. 4, fig. 11 (Ogove).
=*Parnara anelia* Bethune-Baker, 1908: 480 (Congo).
=*Parnara chambezi* Neave, 1910: 80; pl. 3, fig. 9 (Chambezi Valley).

Evans (1937: 186) records this subspecies from Sierra Leone and Nigeria in a range which includes most of Africa south of the Sahara. Berger (1962: 463) lists it from Guinea, suggesting that *monasi* may be a resident in Liberia. There are specimens in Carnegie Museum from Ghana, Cameroon and Gabon, including the type of *subochracea*. Other subspecies occur in Madagascar, Mauritius and the Seychelles.

Genus **GEGENES** Hübner

Gegenes Hübner, 1819 [1816-1826]: 107. Type-species: *Papilio pygmaeus* Cyrilli (=*pumilio*), designated by Butler, 1870c: 93.
=*Philoodus* Rambur, 1842: 308. Type-species: *Hesperia nostrodamus* Fabricius, designated by Scudder, 1875: 248.

This genus, also represented in the Indo-Australian fauna, contains four African species. One is definitely known to occur in Liberia and two others may.

[**Gegenes pumilio gambica** (Mabille)]

Pamphila gambica Mabille, 1878: 233 (Senegambia).
=*Pamphila occulta* Trimen, 1891: 103 (Barberton, Transvaal).
=*Parnara* (?) *ursula* Holland, 1896: 64; pl. 2, fig. 4 (East Africa).

G. p. gambica is the subspecies of this savanna species occurring south of the Sahara and it should be looked for in the drier portions of Liberia on the strength of records from Gambia and Upper Volta (Evans, 1937: 188-189 and Berger, 1962: 463). Specimens from Cameroon and Gabon are the only ones in Carnegie Museum.

Gegenes niso brevicornis (Plötz) (Fig. 126, ♂ genitalia)

Thymelicus brevicornis Plötz, 1884d: 290 (Angola).

The nominate subspecies is South African. *G. n. brevicornis* is found from Gambia to Cameroon and east throughout East Africa.

Liberia: Webo, 1 ♀, II (Picard, 1950: 627); Harbel, 1 ♂, II, 2 ♀, IV (Fox).

There are also specimens of *brevicornis* in Carnegie Museum from Cameroon, Gabon, Uganda, Tanganyika and Nyasaland.

[**Gegenes hottentota** (Latreille)]

Hesperia hottentota Latreille, 1823 [1819-1823]: 777 (Cape of Good Hope).
=*Pamphila obumbrata* Trimen, 1891: 103; pl. 9, fig. 23 (Ehanda, Angola).
=*Gegenes hottentota ocra* Evans, 1937: 190 (Dordrecht, Cape of Good Hope).

The subspecies *ocra* cannot be valid if one accepts the concept of non-overlapping subspecies. Throughout its range, as defined in the original description, *ocra* is in contact with typical *hottentota*. It is likely that *ocra* represents a seasonal form and, as such, the name is not worthy of retention.

This species has not been reported from Liberia, though Evans (1937: 189) mentions specimens from "W. Afr. (Gambia to Cameroons)", indicating that it probably occurs in Liberia.

Superfamily Papilionoidea

by Richard M. Fox

Family Papilionidae

The most comprehensive world-wide classification at present available for this interesting family was presented by Munroe (1960). Although Munroe did not complete his study on the monographic basis that was his original goal, being forced by circumstances to turn his attention to other matters and to terminate his work on Papilionidae leaving "many points of uncertainty . . . to be resolved," his results are sound, well-considered and should represent a foundation for future work on the subject. Munroe's classification is followed herein.

Sixteen species previously were known to occur in Liberia, three of which I did not take, although I happened to find two other species to add to the list, bringing it to 18. In addition there are five species that almost certainly should be found in Liberia, though not yet recorded. Villiers (1957) provides excellent black and white drawings of most members of the Liberian fauna.

The Papilionidae appear to respond only to major ecological barriers and thus, in general, tend less than most butterflies to become divided into geographic subspecies. Of the 18 species found in Liberia, 13 extend into the Equitorial area without change and only five have subspecies endemic to the Occidental area.

Subfamily Papilioninae

Tribe Leptocircini

Genus **GRAPHIUM** Scopoli

Graphium Scopoli, 1777: 433. Type-species: *Papilio sarpedon* Linné, designated by Hemming, 1933.

[Graphium antheus antheus (Cramer)]

Papilio antheus Cramer, 1779 [1775-1791], 3: 71; pl. 234, figs. B and C. (Amboina Island).

Cramer undoubtedly received his specimen from a far-ranging

trader who touched both at Amboina and on the Guinea coast. The species is distributed in tropical forests from Sierra Leone to East Africa, but has not yet been recorded from Liberia. Condamin and Roy (1963) reported it from the Nimba range in the Republic of Guinea.

Graphium policenes (Cramer)

Papilio policenes Cramer, 1775 [1775-1791], 1: 61; pl. 37, figs. A and B (Suriname).

The locality cited by Cramer is not correct; the species is found in forests throughout tropical Africa and is rather common. In Liberia I found it only at inland localities.

Liberia: Gbanga (at stream bank), 1 ♂, X; Ganta, 1 ♀, II, 1 ♂, VI, 1 ♂, V (mostly at flowers); Wanau Forest (puddles, flowers), 1 ♂, I, 6 ♂, III, 6 ♂, X; trail from Voinjama to Yendamalahoun (at stream bank), 1 ♂, IV; Yendamalahoun, 1 ♂, IV (Fox); eastern Liberia, 4 specimens, II, IV (Condamin, 1951); Buttikofer (1890); Sharpe (1906) from Reynolds and Whicker collections.

Graphium illyris (Hewitson)

Papilio illyris Hewitson, 1873: 232 (Gold Coast). 1873 [1852-1876], 5: [2]; pl. [1], figs. 43 and 44.

This species probably is limited to forests of the coastal strip and was not recorded by Condamin and Roy (1963) from the Nimbas. The Cavalla valley may be the western limit of its distribution.

Liberia: Matouke, Penoke, Siouibli, 3 specimens, III, IV, V (Condamin, 1951).

Graphium leonidas leonidas (Fabricius)

Papilio leonidas Fabricius, 1793 [1793-1794], (1): 35 (Africa).

This species inhabits forests throughout tropical Africa, with subspecies on some of the islands.

Liberia: Harbel, 1 ♀, V; Wanau Forest, 1 ♀, III; trail from Voinjama to Yendamalahoun, 1 ♂, IV (Fox); Buttikofer (1890); Sharpe (1906) from Reynolds collection.

[**Graphium adamastor adamastor** (Boisduval)]

Papilio adamastor Boisduval, 1836: 371 (Coast of Guinea).
=*Graphium adamastor dimbroko* Berger, 1950: 39 (Sierra Leone).

After noting that the type of *adamastor* came from the coast of Guinea and that the nominate form is not found in the Congo, Berger unaccountably elected to designate the Occidental subspecies as *dimbroko*. There is no evidence that the Boisduval type is falsely labelled.

This species has not been recorded from Liberia, but since it is known from Sierra Leone, Ivory Coast (Berger, 1950) and the Nimba country of Guinea (Condamin and Roy, 1963), it almost certainly occurs there.

[**Graphium almansor carchedonius** (Karsch)]

Papilio carchedonius Karsch, 1895: 285-286 (Togo).

This and the preceding species are closely similar; Condamin and Roy (1963) give a table of characters for separating the respective Occidental subspecies. Berger (1950: 79-83) believed that the holotype of *P. almansor* Honrath (1894: 210; pl. 7, fig. 9) was mistakenly labelled "Guinea" because of a confusion of geographic terms and that the true type locality should be corrected to "Angola". Since "Guinea" sometimes has been used in a very broad sense to include both the Occidental and the Equitorial areas, Berger may be right that Pogge, the collector, intended "Lower Guinea". Berger also argues that the Honrath paratype did not really come from "Ashanti" as labelled; in any event Berger states that Honrath's figures agree with specimens from Angola, Katanga and Northern Rhodesia rather than with Occidental material.

Though this species has not yet been recorded from Liberia, it was found in the Nimbas (Villiers, 1949) and should be found on the Liberian side of the frontier.

Graphium tynderaeus (Fabricius)

Papilio tynderaeus Fabricius, 1793 [1793-1794], (1): 35 (No locality cited).

The species ranges from Sierra Leone through the Congo valley. While well represented in Carnegie Museum by long series from Cameroons, it appears to be rare in Occidental Africa. Condamin and Roy (1963) record a single male from the Nimba country and I did not find it.

Liberia: Doueke, 1 specimen, III (Condamin, 1951); Buttikofer (1890).

[**Graphium pylades** (Fabricius)]

Papilio pylades Fabricius, 1793 [1793-1794], (1): 34 (Africa).

This species is found from Senegal to the White Nile, south to the northern margin of the rain forests and in the East African and Angolan grasslands. Condamin and Roy (1963) record a male captured in the prairie at the summit of Mt. Richard-Molard, the highest ridge of the Nimba range (5748 feet above sea level). This savanna species should be looked for in the prairies along the crests of the Nimbas on the Liberian side of the frontier. Elsewhere in Liberia its occurrence is unlikely. Neither the coastal parks nor the tiny woodland parks of the north are ecologically similar to the true savannas where *pylades* is normally found.

Graphium latreillianus latreillianus Godart

Papilio latreillianus Godart, 1819: 44-45 (Africa). Guérin-Méneville, 1830: pl. 76, figs. 1 and 1a.

The nominate subspecies is Occidental, with other subspecies ranging to Uganda and Angola. A rainforest component, it first was recorded from Liberia by Condamin (1951) and a series was taken in the Nimba country (Condamin and Roy, 1963) in January and February.

Liberia: St. Paul River at Zorzor road, 1 ♂, V (Fox); Diyala, 1 specimen, V (Condamin, 1951).

Tribe PAPILIONINI

Genus **PAPILIO** Linné

Papilio Linné, 1758: 458. Type-species: *Papilio machaon* Linné, designated by Latreille, 1810.

Munroe (1960) divided *Papilio,* as restricted, into five sections. "Because these sections cannot be defined by any simple system of adult characters, and as they are all nearly related, I do not dignify them as subgenera," he wrote. All members of the genus occurring in Liberia belong to Munroe's "Section II."

Papilio menestheus menestheus Drury

Papilio menestheus Drury, 1773 [1770-1782], 2: 15-16; pl. 9, fig. 1 (Sierra Leone).

The presence of swallowtails distinguishes this species from the next one. The nominate subspecies is Occidental, while the species as a whole occurs throughout tropical Africa. Males sometimes come to puddles, stream banks or flowers; females sometimes are found flying low. The species is typically a denizen of primary forest.

Liberia: Harbel, 1 ♂, V, 1 ♂, XII; Fish Lake, 1 ♀, XII; Ganta, 1 ♀, III, 1 ♀, VI, 1 ♂, VII, 1 ♀, VIII (all in forest); Wanau Forest, 1 ♂, II, 4 ♂, 3 ♀, III, 2 ♂, X; Bomi Hills, 1 ♂, IV; Yendamalahoun, 1 ♀, IV (Fox); eastern Liberia, 3 ♂, III, IV, V (Condamin, 1951): Sharpe (1906) from Reynolds material.

Papilio demoleus demodocus Esper

Papilio demodocus Esper, 1798: 205; pl. 51, fig. 1 (Africa).

The nominate subspecies is found in the Asiatic tropics and reaches Arabia; subspecies *demodocus* occurs throughout tropical Africa and is one of the commonest species in coastal Liberia. It frequents blossoms and the margins of woodlands and seems to thrive in ecologically disturbed areas, but is rare in the high forest. In size, color and pattern *demodocus* is closely similar to the preceding species but lacks tails on the hindwings.

The records listed below provide an interesting comparison between Harbel, at the coast, and Ganta, miles inland. Both regions are mostly disturbed ecologically, but at Harbel the rains are steadier and of longer duration, while at Ganta the rainy season is shorter and the storms are briefer, interspersed with sunny days. It will be noted that *demodocus* was not taken at Harbel during July or August and only a single male in September, whereas at Ganta I found it through the rainy season, though not during the cold harmattan months of December and January.

Liberia: Harbel, 2 ♂, II, 2 ♂, III, 1 ♀, IV, 4 ♂, V, 1 ♂, 1 ♀ (*in copula*) VI, 1 ♂, IX, 1 ♂, 1 ♀, XI, 1 ♂, XII; Ganta, 1 ♂, III, 3 ♂, 1 ♀, V, 8 ♂, 1 ♀, VI, 3 ♂, VII, 1 ♂, VIII, 1 ♂, XI; Bomi Hills, 2 ♂, IV (Fox); eastern Liberia 13 specimens II to V (Condamin, 1951); Sharpe (1906) from Reynolds and Whicker collections.

Papilio zalmoxis Hewitson

Papilio zalmoxis Hewitson, 1864 [1852-1876], 3: [2]; pl. [1], fig. 18 (Calabar).

This canopy species was first recorded from Liberia by Sharpe (1906) from Reynolds material. Condamin and Roy (1963) record three males from the Nimbas and cite two males from Liberia in the Paris Museum and three in the British Museum. Its range and habits are similar to those of the next species.

Papilio antimachus Drury

Papilio antimachus Drury, 1782 [1770-1782], 3: 1-2; pl. 1 (Sierra Leone).

This spectacular butterfly inhabits the canopy of primary rainforest from Sierra Leone east to Uganda. Condamin and Roy (1963) record a male from the Nimba range and the species is well represented in Carnegie Museum by males from Cameroons, Congo, Central African Republic and Uganda. I collected only sight records, one of them at second hand.

Dr. George W. Harley, of the Ganta Methodist Mission, informed me that on several occasions he had seen a very large orange or brown butterfly soaring bird-like among the treetops in Wanau Forest. Undoubtedly he saw *antimachus.*

In late April, 1958 I motored in Guinea from Macenta to 'Nzerekore along the road that parallels the northern frontier of Liberia. At the top of the pass in the Wangazi range I stopped in an open place among the great trees where a large puddle had been left by the morning showers and found a cloud of butterflies flitting about or sipping at the mud. One of them was *antimachus,* but I missed netting it by inches.

Males sometimes descend to ground level at puddles or stream banks and this habit probably has led to the capture of most specimens in collections. Apparently because females remain in the canopy, they are very rarely taken.

Papilio dardanus dardanus Brown

Papilio dardanus Brown, 1776: 52; pl. 22 (Sierra Leone).

In contrast to the two preceding species, *P. dardanus* fluorishes in disturbed areas and is not commonly found in forests. It frequents flowers and was fond of the red single hibiscus in my yard, where

dozens could have been taken during a dry season. Females, as is well known, are strongly polytypic and have been a favorite study for enthusiasts of mimicry, as well as for enthusiasts of naming "variations". For the numerous kinds of female coloring and patterns in Africa there are available more than a dozen names, all of which must be treated as synonyms. The only kind of female occurring in Liberia is, in contrast with the bright golden male, brownish black with some white discal patches and resembles the local *Amauris niavius*. For a full discussion of mimicry in *dardanus*, see Eltringham (1910). Turner (1963) states that there are eleven subspecies and maps their distributions. *P. d. dardanus* ranges from Sierra Leone to the Rift and south into northern Angola.

Liberia: Harbel, 1 ♂, II, 2 ♀, X; Ganta, 1 ♀, II, 1 ♀, III, 4 ♂, 2 ♀, IV, 8 ♂, 1 ♀, VI, 3 ♂, VII, 3 ♂, VIII, 1 ♀, IX; Wanau Forest, 1 ♂, X; Zorzor, 1 ♂, V, 1 ♂, XI (Fox); Grand Cess, 2 ♂, 1 ♀, II, 1 ♀, IV, 1 ♀, no date; Cape Palmas, 1 ♂, 1 ♀, III (Naysmith); Sharpe (1906).

Papilio phorcas phorcas Cramer

Papilio phorcas Cramer, 1775 [1775-1791], 1: 4; pl. 2, figs. B and C (Sierra Leone).

In a series of subspecies, *phorcas* is distributed from Sierra Leone to Kenya and Nyasaland. The nominate subspecies is Occidental and Condamin's record (1951) was the first from Liberia. From the *sosia-bromius-nireus* complex, *phorcas* is at once distinguished by the presence of tails on the hindwings.

Liberia: Ganta, 1 ♂, VI; Wanau Forest, 2 ♂, III, 2 ♂, VI, 2 ♂, X; Bomi Hills, 1 ♀, IV (Fox); Ziabli, 1 specimen, IV (Condamin, 1951).

[**Papilio hesperus** Westwood]

Papilio hesperus Westwood, 1845: 189-190; pl. 48 (Gold Coast). Condamin and Roy, 1963: 418-419; fig. 2a.

Condamin and Roy (1963) pointed out that this species has been confused with the similar *P. horribilis* and figure the male valves of each. They record a male taken in December at Zeila, in the Nimba range just within Ivory Coast, and give the distribution of the species

as Ivory Coast to Angola and Uganda. *P. hesperus* appears to be rarer than *horribilis* and though not yet recorded from Liberia, it should be found there.

Papilio horribilis Butler

Papilio horribilis Butler, 1872 [1869-1874]: 88; pl. 39, fig. 2 (Ashanti). Condamin and Roy, 1963: 418; fig. 2b.

This species differs from the preceding both in male genitalia and by the markings on the hindwings, where there is a row near the margin of four or five (sometimes six) yellow spots, all about the same size and occupying adjacent cells. In *hesperus* the spot in M_1-M_2 of the hindwing is almost always missing, though it is sometimes represented by a tiny dot, and the two spots on either side of M_3 are very large in comparison with the rest of the series.

The distribution of *horribilis* is from Sierra Leone to Cameroon. Condamin and Roy (1963) record 11 males from the Nimbas; Condamin (1951) records a male from eastern Liberia. I found a female ovipositing in Wanau Forest. The male I captured in the Wangazi range of Guinea was sipping at a puddle.

Liberia: Wanau Forest, 1 ♀, II (Fox); Pata, 1 ♂, II (Condamin, 1951).

Guinea: Wangazi range, road from Macenta to 'Nzerekore, 1 ♂, IV (Fox); Nimba region, 11 ♂ (Condamin and Roy, 1963).

Papilio cynorta Fabricius

Papilio cynorta Fabricius, 1793 [1793-1794], (1): 37 (No locality cited).

The species ranges from Sierra Leone to Kenya and south to Angola. Condamin and Roy (1963) record four males from the Nimbas in Guinea and Carnegie Museum has two males from Sierra Leone. The specimens noted below apparently represent the first specific record from Liberia, though *cynorta* was to be expected. Males are black-brown with a creamy white band across both wings, narrowing anteriorward; females have the band shortened, a white diagonal band near the apex of the forewing and an orange-brown patch on the hindwing. The females look somewhat like *Amauris tartarea*; the males are similar to the males of *Papilio zenobia*, from which they may be

recognized at once by the squared distal ends of the creamy patches of the forewings, these patches being pointed in *zenobia.*

The specimens listed below were captured flying along open trails in the forest in the high country near the frontier with Sierra Leone and Guinea, though the species probably occurs elsewhere in Liberia.

Liberia: trail from Voinjama to Yendamalahoun, 1 ♂, IV; Yendamalahoun, 3 ♂, IV (Fox).

Papilio nireus nireus Linné

Papilio nireus Linné, 1758: 464 ("India").

This and the next two species are easily confused. All are black with a green band crossing the wings and have the anal angle of the hindwings produced but untailed. Differences in male genitalia demonstrate that they are distinct species. The following key, based partly on my own notes and partly on the key given by Condamin and Roy (1963), applies only to specimens from the Occidental area; the Cameroons populations are different subspecies and are even more difficult to separate.

1. Green band at hind margin of forewing as wide as the black area beyond it and on the hindwing extends beyond the end of the discal cell, covering the proximal several mm. of M_1-M_2 and M_2-M_3; forewing with submarginal dots usually double, green on upperside and placed in each cell between R_5 and A, but on the underside these dots are white and the series is sometimes incomplete above M_3; a row of postmedian white dots or streaks on forewing underside. ..... *P. bromius*

   Green band at hind margin of forewing much narrower than the black area beyond it and on hindwing not entering M_1-M_2 and M_2-M_3, or only very slightly. 2

2. Submarginal series of dots present on forewing, green on upperside, white on underside, but often small or the series incomplete; postmedian white markings never present on underside of forewing of males, but in females those between Cu_1 and A are narrower than the marginal black beside them. ..... *P. sosia*

   Submarginal series of dots never present above but some white dots sometimes present on underside of forewing; postmedian white markings never present on forewing underside of males, but in females those between Cu_1 and A are obviously wider than the marginal black beside them. ..... *P. nireus*

While basically a rain forest species, *P. nireus* frequents secondary forest and agricultural lands and often is found at blossoms. It occurs throughout tropical Africa.

Liberia: Harbel, 1 ♀, X, 1 ♂, XII; Ganta, 1 ♂, IV, 1 ♂, VI;

Zorzor, 1 ♀, V, 1 ♂, XI; Yendamalahoun, 3 ♂, IV (Fox); without locality, 1 ♂, 3 ♀, II (Naysmith); eastern Liberia, 5 specimens II, IV, V (Condamin, 1951); Sharpe (1906) from Whicker collection.

Guinea: Road between Macenta and 'Nzerekore, at stream bank, 3 ♂, IV (Fox); Nimba range (Condamin and Roy, 1963).

Papilio sosia sosia Rothschild and Jordan

Papilio sosia Rothschild and Jordan, 1903a: 488 (Sierra Leone).

While the key given above will serve in most cases, certain identification requires examination of the male genitalia. "The species is distributed from Sierra Leone to Uganda, the nominate subspecies is restricted to West Africa, not crossing the Niger toward the east", according to Condamin and Roy (1963), who record eight males from the Nimba country. The pair recorded below were taken at flowers on the mission compound at Ganta, apparently the first for Liberia.

Liberia: Ganta, 1 ♀, II, 1 ♂, VI (Fox).

Papilio bromius bromius Doubleday

Papilio bromius Doubleday, 1845: 176 (Ashanti). Gray, 1852: 26; pl. 6, fig. 2.

This species also frequents flowers and mud puddles. The nominate subspecies occurs throughout the forests of the Guinean subregion, with other subspecies in East Africa. It appears to be the commonest of these three nearly identical-looking species.

Liberia: Harbel, 1 ♂, V; Ganta, 1 ♂, II, 1 ♂, III, 2 ♂, V, 1 ♂, VI; Wanau Forest, 1 ♂, III, 1 ♂, VIII; St. Paul River at Zorzor road, 1 ♂, II; Zorzor, 1 ♂, XI; Yendamalahoun, 2 ♂, IV (Fox); eastern Liberia, 2 specimens, III, IV (Condamin, 1951); Buttikofer (1890).

Papilio zenobia Fabricius

Papilio zenobia Fabricius, 1775: 503 (Sierra Leone).

I found this species at flowers at Ganta Mission, at Yendamalahoun and Zorzor flying along the edge of the forest in agricultural lands and in Wanau Forest flying along an open, sunlit trail. The species is distributed from Sierra Leone to Uganda throughout the Guinean subregion.

Liberia: Ganta, 1 ♂, VI, 1 ♂, VII; Wanau Forest, 3 ♂, II, 2 ♂, III, 2 ♂, X; Zorzor, 2 ♂, IX; Yendamalahoun, 1 ♂, 2 ♀, IV (Fox); eastern Liberia, 6 specimens, II to V (Condamin, 1951).

Papilio cypraeofila cypraeofila Butler

Papilio cypraeofila Butler, 1868b: 60 (Sierra Leone).
=*Papilio zenobius*: Godart (not Fabricius), 1819 [1819-1823]: 74 (Sierra Leone).

This species ranges throughout the Guinean subregion; the nominate subspecies is confined to Occidental Africa. Condamin and Roy (1963) found it in the Nimbas, especially at lower levels. I took it at blossoms in Ganta and open clearings in Wanau Forest.

Liberia: Ganta, 2 ♂, II, 1 ♂, IV, 1 ♂, VI; Wanau Forest, 1 ♂, I, 2 ♂, II, 3 ♂, III, 2 ♂, X (Fox); eastern Liberia, 3 specimens IV and V (Condamin, 1951).

Family Pieridae

The generic revision of the Pieridae by Klots (1931-1932) reviews the fauna of the entire world and provides a definitive basis for the classification of this family. It is followed here with a few corrections of names made necessary by more recent bibliognostic work, such as that of Hemming (1934).

Discounting the synonyms, Buttikofer (1890) listed ten and Sharpe (1906) added one species for the Liberian pierid fauna. Berger's list (1954) contributed six more species and with the five new records included in my collection, the total known is now 22. Four species are entered in the following list because the known ranges and habits of each indicate that they probably occur in Liberia, though they have not yet been recorded.

Subfamily Pseudopontiinae

Genus **PSEUDOPONTIA** Plötz

Pseudopontia Plötz, 1870: 348. Type-species: *Pseudopontia calabarica* Plötz (= *Globiceps paradoxa* Felder), by monotypy.

The subfamily contains only the monotypic genus *Pseudopontia* and is exclusively African. Ehrmann (1894) described what he thought was a second species of the genus; it is discussed under *Leptosia alcesta,* below.

Pseudopontia paradoxa paradoxa (Felder)

Globiceps paradoxa C. and R. Felder, 1869: [30-31] (Calabar).

This pretty little butterfly has such deviant structures that it was once thought to be a moth. Klots (1931-1932) discussed the male genitalia and pointed out that they are entirely pierid. The wings are white without markings, are rather translucent and slightly iridescent. The nominate subspecies ranges from Sierra Leone into the northern part of the Congolese forest; a second subspecies is found in central and southern Congo. Common in Cameroons, *paradoxa* appears to be rare in the Occidental area. It flies in primitive forest.

Liberia: Bomi Hills, 1 specimen, IV (Fox); no data, 6 ♂ (Good); eastern Liberia, 11 ♂, 6 ♀ (Berger, 1954); Buttikofer (1890); Sharpe (1906).

The Bomi Hills specimen cannot be sexed because the body was destroyed by mites while the package containing it was *en route* between Liberia and Pittsburgh.

Subfamily Pierinae

The Pierinae comprises 54 genera on a world-wide basis, 14 of which occur in Africa and eight in Liberia. Two of the three tribes recognized by Klots (1931-1932) are represented.

Tribe Rhodocerini

Genus **CATOPSILA** Hübner

Catopsila Hübner, [1819] [1816-1826]: 98. Type-species: *Papilio crocale* Cramer, designated by Scudder, 1875.

This essentially Indo-Australian genus is represented on continental Africa only by one species, found everywhere south of the Sahara as well as in tropical Asia east to China.

Catopsila florella (Fabricius)

Papilio florella Fabricius, 1775: 479 (Sierra Leone).

During the dry season this species is exceedingly common, especially in more open country and disturbed areas. Males are waxy white with some black dots at the forewing apex and a tiny dot at the end of the cell; females are orange, yellow or white and have rusty

brown marks along the edges of the wings. Both sexes fly rapidly and are difficult to capture during most of the day, but toward sunset they seek resting places among the leaves of low bushes, especially near the edges of fields, and then are readily netted.

Libria: Harbel, 2 ♂, I, 1 ♀, II, 1 ♀, III, 2 ♀, XII; Ganta, 1 ♂, II, 3 ♂, VI; Zorzor, 2 ♂, XI; trail from Voinjama to Yendamalahoun, 2 ♂, IV (Fox); eastern Liberia, 5 ♂, II, III, IV (Berger, 1954); Sharpe (1906) from Reynolds and Whicker collections.

Genus EUREMA Hübner

Eurema Hübner, [1819] [1816-1826]: 96. Type-species: *Eurema demoditas* Hübner (=*Pieris daira* Godart), designated by Butler, 1870.

=*Terias* Swainson, 1821: pl. 22. Type-species: *Papilio hecabe* Linné, by original designation.

When he wrote his revision of the family, Klots (1931-1932) regarded *Eurema* as a single, homogeneous, world-wide genus which he divided into seven subgenera. Hemming stated that the types of the two generic names are congeneric. However, Klots (personal communication) has recently expressed the opinion to me that *Terias* should be used as the generic name for Old World species, *Eurema* for those of the New World; he did not make clear whether he would now elevate all seven of his original subgenera. The structural differences among these subgenera (Klots, 1931-1932: 186-189) do not seem to be major and I prefer to follow Klots' original classification.

Eurema brenda (Doubleday and Hewitson)

Terias brenda Doubleday and Hewitson, 1847 [1846-1852]: 79; pl. 19, fig. 6 (Sierra Leone).

This and the next species are variable within overlapping limits of size and coloring. Talbot (1935 [1932-1935]) listed *brenda* as a "form" of *senegalensis*, but Birket-Smith (1960: 545-547) figured male genitalia and demonstrated that they are distinct. The records of *senegalensis* by Buttikofer (1890) and Sharpe (1906) probably include both species. In general, *brenda* is larger than *senegalensis* and the males are bright sulfur yellow, while *senegalensis* males are a darker gold or ochre yellow and sometimes also have some brownish marks; females of both species are yellow white to flat white and differ

mainly in size, *brenda* females having the length of the forewing as great as 40 mm. *E. brenda* occurs throughout the Guinean subregion.

Liberia: Harbel, 2 ♀, V, 2 ♂, X, 1 ♂, XI, 1 ♂, XII; Kpain, 3 ♂, 2 ♀, V; Ganta, 1 ♂, 1 ♀, III, 1 ♂, V, 1 ♂, 2 ♀, VI; 1 ♀, VIII; 2 ♂, X, 1 ♀, XI; Wanau Forest, 1 ♂, II, 6 ♂, III, 1 ♂, X; Zorzor, 1 ♂, XI; Bomi Hills, 1 ♂, IV; Yendamalahoun 1 ♂, 1 ♀, IV (Fox); eastern Liberia, 8 ♂, 4 ♀ (Berger, 1954, as *T. senegalensis* form *brenda* and ♀ form *maculata*); Buttikofer (1890); Sharpe (1906) from Whicker Collection.

Eurema hecabe senegalensis (Boisduval)

Terias senegalensis Boisduval, 1836: 672 (Senegal).
=*Terias leonis* Butler, 1886: 222; pl. 5, fig. 6 (Sierra Leone).

This subspecies is found throughout Africa south of the desert and also occurs on the Arabian peninsula. It is one of the few butterflies active during the rainy season. I found it to be far more common near the coast in open agricultural lands than is indicated by the number of specimens collected. Within forests it flies only in open sunny clearings or along sunlit trails.

Liberia: Harbel, 4 ♂, I, 1 ♀, II, 6 ♂, 1 ♀, III, 1 ♂, 1 ♀, IV, 5 ♂, V, 1 ♂, 1 ♀, VI, 1 ♂, 1 ♀, VII, 1 ♀, VIII, 2 ♂, 1 ♀, IX, 3 ♂, X, 2 ♂, 1 ♀, XI, 5 ♂, 3 ♀, XII; Fish Lake, 2 ♀, I, 2 ♂, XII; Kpain, 2 ♂, V; Ganta, 1 ♂, 1 ♀, II, 5 ♂, V, 1 ♂, VI, 4 ♂, VII, 1 ♂, VIII, 2 ♂, X; Wanau Forest, 1 ♀, I, 6 ♂, 4 ♀, III, 1 ♂, V, 1 ♀, VIII, 4 ♂, X; St. Paul River at Zorzor Road, 1 ♂, III; Zorzor, 5 ♂, 3 ♀, XI; trail near Fisabu, 2 ♂, 1 ♀, XII; Bomi Hills, 2 ♂, 1 ♀, IV; Yendamalahoun, 8 ♂, 2 ♀, IV (all Fox); Bigtown, 2 ♂, 1 ♀, XI (Naysmith); eastern Liberia, 42 ♂, 8 ♀ (Berger, 1954); Buttikofer (1898) as *floricula* Boisduval; Sharpe (1906), probably including *brenda*.

Eurema desjardinsii regularis (Butler)

Terias regularis Butler, 1876: 486 (Atbara, Abyssinia).

This subspecies is found throughout tropical continental Africa; the nominate subspecies occurs on Madagascar. *E. d. regularis* is basically a savanna species but finds its way into agricultural lands of the

Forest Zone (according to a good series in Carnegie Museum from such biotopes in Cameroons).

Liberia: Bigtown, 1 ♂, 1 ♀ (Naysmith); Penoke, 1 ♀, VI (Berger, 1954).

Euremea brigitta brigitta (Stoll)

Papilio brigitta Stoll, 1780 [1775-1791], 4: 82; pl. 331, figs. B and C (Coast of Guinea).

This species is found also in the Indo-Australian region; subspecies *brigitta* is distributed on Africa south of the desert. It differs from the preceding species in the arrangement of the dark markings on the underside of the hindwing. In *brigitta* the marks in M_3-Cu_1 and Cu_1-Cu_2 are on a line parallel to the outer margin, but in *desjardinsii* the lower mark is much nearer the margin; both these species differ from *brenda* in having the costal margin of the forewing black.

The records below apparently are the first for Liberia. Berger (1954) does not list the species and Bernardi (1954) records one specimen taken in the forest at the base of the Nimbas in Guinea.

Liberia: Harbel, 2 ♀, X; Ganta, 1 ♂, X (Fox); Bigtown, 1 ♂, 1 ♀; Cape Palmas, 1 ♀ (Naysmith).

[**Eurema hepale** (Mabille)]

Terias hepale Mabille, 1882: 99 (Madagascar). 1885 [1885-1887]: 250; pl. 32, fig. 6.

Bernardi (1954) records one specimen from the forest at Nion, in the Nimba country, but the species has not yet been found in Liberia. It probably occurs there and is quite rare throughout its range, which includes most of tropical Africa.

Tribe PIERINI

Genus **NEPHERONIA** Butler

Nepheronia Butler, 1870b: 38, 53. Type-species: *Pieris idotea* Boisduval, by original designation.

Nepheronia argia argia (Fabricius)

Papilio argia Fabricius, 1775: 470 (Sierra Leone).

This is a large species with the forewing measuring from 30 to 40 mm. along the costal margin. Males are snowy white with a black

forewing apex; females have a broad, irregular black margin along each wing and vary in ground color quite remarkably. Of the females I took in Liberia, six are bright yellow, two are snowy white and one is white with a bright orange spot near the base of the forewing. These, and other color variations that I did not happen to collect, have been given names which can only be disregarded as synonyms, since a population includes all of its variants and names are properly given only to populations, not to colors and spots. The nominate subspecies is Occidental African. I recently (1963) described the population from the Equatorial area as *N. a. hollandi* and still another subspecies occurs throughout East Africa. In Liberia I found *argia* to be uncommon near the coast but abundant in agricultural lands and open woods in the interior.

Liberia: Harbel, 1 ♂, IV; Ganta, 1 ♂, 2 ♀, II, 2 ♂, III, 1 ♂, V, 2 ♂, VI, 1 ♂, X, 2 ♂, 2 ♀, XI; Kpain, 1 ♀, X; Wanau Forest (in open places); 2 ♂, 1 ♀, II, 2 ♂, III, 1 ♂, V, 2 ♂, VI, 1 ♂, X (Fox); Cape Palmas, 1 ♂, IX (Good); no locality, 1 ♀, IV (Naysmith); Touzon, 1 ♀, IV (Berger, 1954, who also records 1 ♂ from Pata, on the Ivory Coast side of the Cavalla River).

Nepheronia pharis (Boisduval)

Pieris pharis Boisduval, 1836: 443 (Coast of Guinea).

Both sexes are white with the tip of the forewing black and have a yellow tinge on the underside and, on the hindwing, some brown markings. Aurivillius (1910 [1908-1925]) says the species is rare and is distributed from Sierra Leone to Angola and Uganda. The records below are the first for Liberia. All were taken within deep forest.

Liberia: Ganta, 1 ♂, V; Wanau Forest, 1 ♀, I, 2 ♂, III, 2 ♂, 1 ♀, VIII (Fox).

Nepheronia thalassina thalassina (Boisduval)

Pieris thalassina Boisduval, 1836: 443 (Senegal and Coast of Guinea).

This species is rather similar to *N. argia,* but in males the black at the apex and along the margin of the forewing is wider and more extensive; in females it is more irregular and the ground color is uni-

formly white. On the hindwings of both sexes there are black dots at the tips of the veins. The species occurs everywhere in the tropical forests of Africa; the nominate subspecies is Occidental and I have recently (1963) pointed out that the Equatorial population is *N. t. verulans* Ward. This last name had been used for a female aberration by Aurivillius (1898), in which odd decision he has been followed by subsequent authors. *N. t. thalassina* is common in the Nimba country (Bernardi, 1954) and evidently is an inland form.

Liberia: Kpain, 2 ♂, V; Wanau Forest, 1 ♂, III; Wozi, 1 ♀, XI; Yendamalahoun, 2 ♂, IV (Fox); Maloubli, 1 ♀ (Berger, 1954).

Genus **COLOTIS** Hübner

Colotis Hübner, [1819] [1816-1826]: 97. Type-species: *Papilio calais,* Stoll (not Cramer), designated by Scudder, 1875 (as *Papilio amata* Fabricius).

The genus is a large one, well represented in both the Indo-Australian and African regions. One species is known from Liberia and the presence of another is remotely possible.

[Colotis doubledayi (Hopffer)]

Idmais doubledayi Hopffer, 1862: 363 (Mozambique).

According to Aurivillius (1910 [1908-1925]) this species is distributed from Sierra Leone to Congo and Angola, to which the type locality must certainly be added. The Sierra Leone record used by Aurivillius (1898) to mark the western limit of the range was from the Staudinger Collection and might have been in error. It has never been recorded from Liberia. Bernardi (1954) did not include it among the Pieridae from the Nimba country nor did he record it (1952) from Togo or Dahomey. Furthermore, it is not represented in the fine collections from the Cameroon forests in Carnegie Museum. I suspect that it does not occur in Occidental Africa, the Staudinger record notwithstanding. If Staudinger's "Sierra Leone" was correct, then *doubledayi* might be found in Liberia.

Colotis evippe (Linné)

Papilio evippe Linné, 1758: 469 (Asia). Cramer, 1776 [1775-1791], 1: 143; pl. 91, figs. F and G (Sierra Leone).

Males are white with black edgings and bands and have a red patch near the forewing apex; females are whitish yellow to orange (most frequently yellow) with black markings as in males but without the red apex. The species, found in sunny places and open fields, occurs in the Guinean subregion.

Liberia: Harbel, 2 ♂, I, 2 ♂, 1 ♀, III, 3 ♂, 1 ♀, IV, 1 ♂, 2 ♀, VI, 1 ♂, VII; Kpain, 1 ♂, V; Ganta, 1 ♂, II, 2 ♀, V, 1 ♂, 2 ♀, VI, 1 ♂, VII; Wanau Forest, 1 ♂, X; St. Paul River at Zorzor Road, 1 ♂, V; Bomi Hills, 2 ♂, IV (Fox); Bigtown, 1 ♂, 2 ♀, II, III, IV; no locality, 2 ♂, 1 ♀, II (Naysmith); Cape Palmas, 1 ♂, IX; no locality, 1 ♂, 1 ♀ (Good); eastern Liberia, 7 ♂, 4 ♀, I to IV (Berger, 1954); Buttikofer (1890); Sharpe (1906).

Genus **BELONOIS** Hübner

Belonois Hübner, [1819] [1816-1826]: 92. Type-species: *Papilio calypso* Drury, by monotypy.

=*Anaphaeis* Hübner, [1819] [1816-1826]: 93. Type-species: *Papilio creona* Cramer, designated by Scudder, 1875.

=*Glycestha* Billberg, 1820: 76. Type-species: *Papilio coronea* Cramer, designated by Scudder, 1875 (as *Papilio java* Linné).

Hemming (1934) stated that *P. coronea* Cramer is congeneric with *P. creona* Cramer, while Klots (1931-1932: 206-207) found that *P. calypso* Drury is congeneric with *P. creona.* According to Klots, even though *Belonois* is distinctly separate from *Pieris,* "there are no constant characters of even subgeneric worth for the retention of *Anaphaeis.*" Hemming (1937) pointed out that *Anaphaeis* Hübner was published in 1819 and therefore has priority over *Glycestha* Billberg, 1820. *Belonois* has page priority over *Anaphaeis.*

The genus is represented in both the Indo-Australian and the African regions. Two species are known from Liberia and three others may eventually be found.

[**Belonois creona creona** (Cramer)]

Papilio creona Cramer, 1776 [1775-1791], 1: 148; pl. 95, figs. C and F (East Indies).

The nominate subspecies is Occidental African. Carnegie Museum has two males from Sierra Leone, a male and a female from Accra. The Deykeser-Holas Expedition did not find it in the Cavalla Valley

(Berger, 1954), it is not included in the report of pierids from the Nimbas (Bernardi, 1954), and the species probably is a savanna form. It might occur in disturbed areas in Liberia.

Belonois calypso calypso (Drury)

Papilio calypso Drury, 1773 [1770-1782], 2: 33; pl. 17, figs. 3 and 4 (Sierra Leone).

The upperside is white with a lacy black border on the forewing and large round spots at the ends of the hindwing veins; beneath, the forewing is white, the hindwing yellow; the length of a forewing is about 35 to 40 mm. The nominate subspecies is Occidental and the species as a whole is distributed throughout the tropical forests of Africa. I found it in Liberia along the margins of woods, in glades or sunny trails.

Liberia: Harbel, 2 ♂, III, 1 ♂, IV, 2 ♂, V, 1 ♂, XII; Ganta, 1 ♂, III, 2 ♂, V, 1 ♂, 1 ♀, VI; Wanau Forest, 2 ♂, 1 ♀, III, 1 ♀, VIII; Bomi Hills, 1 ♂, 1 ♀, IV; Zorzor, 1 ♂, 1 ♀, XI; Yendamalahoun, 1 ♂, 1 ♀, IV (Fox); no data, 2 ♂, 2 ♀ (Good, Naysmith); eastern Liberia, 1 ♂, 2 ♀ (Berger, 1954); Buttikofer (1890); Sharpe (1906) from Reynolds and Whicker collections.

Belonois theora theora (Doubleday)

Pieris theora Doubleday, 1846: 25 (Ashanti). Doubleday and Hewitson, 1847 [1846-1852]: 47; pl. 6, fig. 4.

The black spot or bar at the end of the forewing cell, present in *B. calypso* is absent in this species. *B. theora theora* occurs throughout the Guinean subregion. The western limit of distribution has heretofore been given as Ivory Coast, though a male is recorded from the Cavalla Valley (Berger, 1954) and Carnegie Museum has a male from Sierra Leone.

Liberia: Wanau Forest, 1 ♂, III (Fox); Grand Cess, 2 ♂, II (Naysmith); Diyala, 1 ♂ (Berger, 1954).

[**Belonois hedyle** (Cramer)]

Papilio hedyle Cramer, 1777 [1775-1791], 2: 137; pl. 186, figs. C and D. (East Indies).

This species is the same size as the several listed above, but it has solid black margins on both wings and the ground color is yellow. It

seems to be decidedly rare, as the only specimens in Carnegie Museum are two males from the Holland Collection, one of which is labelled "West Africa, H. G. Smith." Bernardi (1952) records *hedyle* from forests in Togo and Dahomey and gives the distribution as "Sierra Leone to Dahomey". Schaus and Clements (1893) list it from the vicinity of Freetown, an area forested at that time. Apparently *hedyle* is not a savanna form and it ought to be found in Liberia.

[**Belonois ianthe ianthe** (Doubleday)]

Pieris ianthe Doubleday, 1842: 77 (Sierra Leone). *Belonois ianthe*: Butler, 1871 [1869-1874]: 91; pl. 34, fig. 8.

The forewing is about 30 to 35 mm. long and the species is readily distinguished from *hedyle* by the series of round dots at the ends of the hindwing veins; the ground color is yellow and the forewing has a solid black margin, widest at the apex. It appears to be even more unusual than *hedyle* and the only records of the nominate subspecies are from Sierra Leone. It may be a savanna-limited species, thus not to be expected in Liberia, but its occurrence there is a possibility.

Genus **APPIAS** Hübner

Appias Hübner, [1819] [1816-1826]: 91. Type-species: *Papilio zelmira* Stoll, designated by Butler, 1870.

This genus is richly represented in the Indo-Australian region and there are five species in tropical Africa. Three occur in Liberia.

Appias sylvia sylvia (Fabricius)

Papilio sylvia Fabricius, 1775: 470 (Sierra Leone).
=*Papilio eudoxia* Cramer, 1779 [1775-1791], 3: 35; pl. 213, fig. C (Sierra Leone).

The species is found from Sierra Leone to East Africa and the nominate subspecies is limited to the Guinean subregion. Males are pure white with a yellow or orange blush at the very base of the forewing, a black margin on the forewing and black spots along the hindwing margin; females have the forewings orange, the hindwings white and all the black markings are wider than in males. I found it principally in sunny places, especially at the margins of forests or in secondary bush.

Liberia: Harbel, 3 ♂, 1 ♀, I, 1 ♀, II, 1 ♂, III, 1 ♀, IV, 1 ♂, V,

1 ♂, VI, 1 ♂, VII, 2 ♂, XI, 1 ♀, XII; Ganta, 1 ♂, II, 1 ♀, IV, 1 ♂, VI; Wanau Forest 2 ♀, II; St. Paul River at Zorzor Road, 1 ♂, III; Zorzor, 1 ♂, XI, 1 ♂, 1 ♀, XII; trail near Fisabu, 1 ♂, XII (Fox); Diyala, 1 ♀ (Berger, 1954); Buttikofer (1890); Sharpe (1906).

Appias sabina sabina (C. and R. Felder)

Pieris sabina C. and R. Felder, 1865 [1864-1867]: 167 (Guinea).
=*Appias phileris*: Sharpe (not Boisduval), 1906: 880.

The nominate subspecies is found in the Guinean subregion and the species as a whole is found everywhere in tropical Africa. Sharpe (1906) misidentified Liberian material as *phileris* Boisduval, properly a synonym for the Madagascar subspecies. The wings of both sexes are white; the forewing has a marginal band, wider at the apex, consisting of black spots connected by grey-black. I did not happen to find *sabina,* which evidently is a forest species.

Liberia: no data, 1 ♂ (Engel Collection in Carnegie Museum); eastern Liberia, 7 ♂, IV (Berger, 1954); Buttikofer (1890); Sharpe (1906) from Reynolds Collection.

Appias epaphia epaphia (Cramer)

Papilio epaphia Cramer, 1779 [1775-1791], 3: 26; pl. 207, figs. D and E (Sierra Leone).

Both wings are white in both sexes and the costa of the forewing is about 25 mm. long; males have only a short black margin at the apex of the forewing; females have wide brownish black marginal bands on both wings, with two white streaks at the forewing apex and a broad brownish black band along the forewing cell. The species is distributed from Sierra Leone to Abyssinia and Madagascar, with the nominate subspecies occurring in the Guinean subregion. Bernardi (1954) does not record *epaphia* from the Nimba country and the localities of specimens in Carnegie Museum suggest that it is a coastal species.

Berger (1954) had a short series from several localities in the Cavalla Valley which apparently puzzled him. He identified this series as *A. phaola.* While *phaola* is superficially similar to *epaphia,* it does not enter the Occidental region beyond Togo, Dahomey and Fernando Po. I suspect that the four males of this series were in fact

A. epaphia and that the female was a specimen of *A. sylvia* in which the forewing orange blush was missing (as sometimes happens). It also seems likely that the record of *phaola* from the Reynolds Collection (Sharpe, 1906) was a similar misidentification.

In addition to Liberian specimens, *A. epaphia* is represented in Carnegie Museum by two males and six females from Sierra Leone (Good), three males from Ghana and excellent series from coastal Cameroons.

Liberia: Harbel, 1 ♂, 1 ♀, IV; 2 ♂, VIII (Fox); Cape Palmas, 1 ♂, 1 ♀ (Good).

Genus **PIERIS** Schrank

Pieris Schrank, 1801 [1798-1803]: 152, 161. Type-species: *Papilio brassicae* Linné, designated by Latreille, 1810.

For many years *Pieris* was used as a catch-all genus for odds and ends which seemed to have no better place. Klots (1931-1932) helped purify the generic definition, and as thus limited the genus is represented in tropical Africa only by some relic populations of *P. brassicoides* in Abyssinia and Tanganyika.

[**Pieris rapae** (Linné)]

Papilio rapae Linné, 1758: 468 (Europe).

This ubiquitous pest species occurs everywhere in the northern temperate zone but probably has not yet become established in tropical Africa. The following record is interesting in that the nearest habitat of *rapae* is northern Africa. It is not clear whether these specimens were captured while migrating or whether they hitchhiked on the ship. In any event, it is not properly a Liberian resident.

Two ♂, "taken at sea 75 miles southwest of Cape Palmas, Liberia" by Good, in the Holland Collection.

Genus **LEPTOSIA** Hübner

Leptosia Hübner, 1818 [1818-1825]: 13. Type-species: *Leptosia chlorographa* Hübner, designated by Scudder, 1875.

The genus is represented in both the Indo-Australian and the African regions. Three species are found in Liberia and they are not easy to distinguish. They are forest-lovers and favor trails or glades.

Leptosia medusa (Cramer)

Papilio medusa Cramer, 1777 [1775-1791], 2: 86; pl. 150, fig. F (Coast of Bengal).

The type locality given by Cramer was, of course, in error and the species is found throughout the Guinean subregion. The length of one forewing is from 23 to 30 mm., averaging about 28 mm. On the forewing the black at the apex usually passes below M_3 and the round black spot, when it is present, is centered between M_3 and Cu_1 but is always absent or quite weak on the underside; the pattern on the underside of the hindwing is decidedly greenish. Bernardi (1954) records two specimens from Mount Nimba in Guinea.

Liberia: Harbel, 1 ♂, II; Fish Lake, 1 ♂, XII; Ganta, 2 ♂, II, 3 ♂, V, 1 ♂, VI; Wanau Forest, 1 ♂, I, 1 ♂, II, 1 ♂, VIII, 2 ♂, X; "West Africa" (undoubtedly Liberia), 2 ♂, 1 ♀ (Naysmith); eastern Liberia, 1 ♂, 1 ♀, III (Berger, 1954).

Leptosia hybrida Bernardi

Leptosia hybrida Bernardi, 1952: 12 (Mt. Nimba, Guinea).

Berger (1954) found this to be the commonest of the three species in eastern Liberia and my own collections bear out its comparative frequency. It is found in the Guinean subregion from Sierra Leone to Lake Victoria. In size, *hybrida* is similar to *medusa;* the forewing has the black in the apex confined above M_3 and the black spot, when it is present, is similarly centered between the veins but is always strongly repeated on the underside; the pattern on the underside of the hindwing is a yellowish tint like *alcesta,* rather than the strong green of *medusa.*

Liberia: Harbel, 1 ♂, XI; Ganta, 1 ♂, III, 2 ♂, V, 2 ♂, VI, 1 ♂, VIII; Wanau Forest, 4 ♂, II, 5 ♂, 1 ♀, III, 1 ♂, V, 8 ♂, VIII, 1 ♂, X (Fox); eastern Liberia, 25 ♂, 7 ♀, II, IV (Berger, 1954).

Leptosia alcesta alcesta (Stoll)

Papilio alcesta Stoll, 1784 [1775-1791], 4: 175-176; pl. 379, fig. A (Coast of Guinea).
=*Pseudopontia cepheus* Ehrmann, 1894: 77 (Liberia). Holland, 1927: 334.
=*Leptosia nupta* form *nuptilla*: Berger (not Aurivillius), 1954: 1032 (Liberia).

Holland (1927) recorded the status of *P. cepheus* Ehrmann as an absolute synonym of *alcesta.* Berger (1954) used "form" *nuptilla*

Aurivillius for the series from the Cavalla Valley, but the name applies properly only to a local population on Mt. Ruwenzori.

L. alcesta is smaller than the other two species and the length of a forewing ranges from 18 to 23 mm., averaging 21 mm. On the forewing the apical black rarely passes below M_1 and the black spot is centered over vein M_3, while in many individuals there are no black spots at all; the underside pattern is yellowish rather than greenish.

Liberia: Harbel, 1 ♂, I, 1 ♂, VI, 1 ♂, VIII; Ganta, 3 ♂, V, 1 ♂, X; Wanau Forest, 8 ♂, II, 2 ♂, III, 1 ♂, V, 4 ♂, VIII, 1 ♂, X; St. Paul River at Zorzor Road, 1 ♂, IV (Fox); no data, 4 ♂ (Naysmith) (including holotype ♂ of *P. cepheus* Ehrmann); eastern Liberia, 2 ♂ (Berger, 1954); Buttikofer (1890); Sharpe (1906).

Genus **MYLOTHRIS** Hübner

Mylothris Hübner [1819] [1816-1826]: 90. Type-species: *Papilio arsalte*, Hübner (not Linné) (=*Papilio poppea* Cramer, 1777), designated by Butler, 1870b (as *P. poppea*).

Talbot's revision (1944) listed twenty-four species, all African, of which four are now known to occur in Liberia. Talbot's speciation and arrangement of species is followed here, but not his concept of subspecies. He seemed to have thought of subspecies in terms of spots and colors rather than in terms of geographic variation, and in many cases listed more than one "subspecies" from a locality.

Mylothris chloris chloris (Fabricius)

Papilio chloris Fabricius, 1775: 473 (Sierra Leone).

This species is widely distributed from Senegal to Abyssinia in the Guinean, Southwest African and East African areas; the nominate subspecies is found in the Guinean subregion but apparently has not been recorded previously from Liberia and it was not included in Bernardi's list of Pieridae from the Nimba country (1954).

Liberia: trail near Fisabu, 1 ♀, XII (Fox); Cape Palmas, 2 ♂, 2 ♀ (Good); no data, 2 ♂, 1 ♀ (Naysmith).

Mylothris sulphurea primulina Butler

Mylothris primulina Butler, 1897: 627 (Lagos).

The species is distributed throughout the forests of Guinean sub-

region, with *M. s. primulina* being entirely Occidental. The following records apparently are the first for Liberia; it was not listed from Nimba by Bernardi (1954).

Liberia: Harbel, 1 ♂, III; Wanau Forest, 2 ♂, II, 1 ♂, III (Fox).

Mylothris poppea poppea (Cramer)

Papilio poppea Cramer, 1777 [1775-1791], 2: 21; pl. 110, fig. D (Guinea).

This species is remarkably similar in size, coloring and marking to *appias sylvia,* which has four branches of the radial vein of the forewing, whereas all species of *Mylothris* have only three. *M. poppea* occurs in almost all tropical Africa, from Sierra Leone to Abyssinia to South Africa; the nominate subspecies is exclusively Occidental. Almost every list of Liberian butterflies includes this common species.

Bernardi (1954) records both *M. p. poppea* and *M. p. hilaria* from the Nimba country and thinks they may be distinct species; it seems more likely that the species is variable in Guinea, as it is everywhere else in its range. *P. p. hilaria* is properly the Congolese subspecies and should not be confused with similar-looking variants of other subspecies.

Liberia: Harbel, 4 ♂, 2 ♀, I, 6 ♂, 5 ♀, II, 1 ♂, 1 ♀, III, 1 ♂, 1 ♀, IV, 2 ♂, V, 2 ♂, VII, 2 ♂, X, 8 ♂, 2 ♀, XI, 4 ♂, 1 ♀, XII; Ganta, 2 ♂, V, 1 ♂, VI; Yendamalahoun, 2 ♂, 1 ♀, IV (Fox); no data, 1 ♂ (Good); eastern Liberia, 1 ♂, 1 ♀, III (Berger, 1954); Buttikofer (1890); Sharpe (1906).

Mylothris rhodope (Fabricius)

Papilio rhodope Fabricius, 1775: 473 (Sierra Leone).

This species is distributed from Sierra Leone to Uganda and south in the Congo basin. While quite variable, it does not appear to break into subspecies.

Liberia: Harbel, 2 ♂, 7 ♀, I, 1 ♂, 1 ♀, II, 2 ♂, III, 1 ♂, IV, 2 ♂, V, 1 ♂, 1 ♀, IX, 1 ♂, 1 ♀, XI; Wanau Forest, 1 ♂, I, 1 ♀, II, 1 ♂, 1 ♀, III (Fox); no data, 1 ♀ (Naysmith); eastern Liberia, 2 ♀, III (Berger, 1954); Sharpe (1906).

Superfamily Nymphaloidea

by Richard M. Fox

Family Danaidae

The Danaidae are richly represented in the Indo-Australian region by a wealth of genera and species and elsewhere in the world the family is, by comparison, depauperate. Other than *Danaus,* which is found nearly everywhere, the American tropics has only the small endemic genera *Clothilda, Lycorea* and *Ituna,* while the Ethiopian region has only one native genus, *Amauris,* comprising about a score of species. *Euploea* is present on the offshore islands in the Indian Ocean, but not on continental Africa.

Four species of *Amauris* and one of *Danaus* are found in Liberia; all were recorded by Sharpe (1906).

Genus **DANAUS** Kluk

Danaus Kluk, 1802: 84. Type-species: *Papilio plexippus* Linné, designated by Hemming, 1933.

This world-wide genus has been divided into a series of subgenera, but in view of the structural homogeneity of all the species, it appears best to maintain *Danaus* as a unit.

Danaus chryssipus chryssipus (Linné)

Papilio chryssipus Linné, 1758: 471 (Egypt).

Despite a considerable degree of variation (almost every possibility has been named), particularly in the color of the hindwing, which may be white, brown or some combination of the two, only one subspecies has been demonstrated to reside on continental Africa. All specimens I took in Liberia have the hindwing largely white.

Liberia: Harbel, 1 ♂, II, 2 ♂, 1 ♀, III, 1 ♂, X, 1 ♀, XI; Ganta, 6 ♀, V, 1 ♂, 1 ♀, VI, 1 ♀, VII, 1 ♂, XII; Wanau Forest, 1 ♀, III; St. Paul River at Zorzor Road, 1 ♀, IV; Zorzor, 1 ♀, XI; Wozi, 1 ♀, XI (Fox); eastern Liberia, II, III, IV (Condamin, 1951); Buttikofer (1890), as *alcippus,* the synonym sometimes applied to the variation with the white hindwing; Sharpe (1906), some as *alcippus,* some as *chrysippus.*

Genus **AMAURIS** Hübner

Amauris Hübner, 1816 [1816-1826]: 14. Type-species: *Papilio niavius* Linné, designated by Scudder, 1875.

Talbot (1940) listed eighteen valid species, all of which are African. Four are found in Liberia.

Amauris niavius niavius (Linné)

Papilio niavius Linné, 1758: 470 (India).

The species is distributed from Sierra Leone to Abyssinia and south to Natal, with the nominate subspecies found in the Guinean subregion. It differs from other Liberian *Amauris* in that the coloring is blackish brown with the light spots blue-white, including a large patch on the basal part of the hindwing, one at the hind margin of the forewing and a wide transverse band across the apex of the forewing. I found it to be common on the coast but uncommon in the interior; it seemed to prefer to flutter along trails and in the underbrush of secondary woods.

Liberia: Harbel, 9 ♂, 1 ♀, I, 11 ♂, 2 ♀, II, 1 ♂, V, 2 ♂, X, 1 ♂, XI, 5 ♂, XII; Fish Lake, 1 ♀, I; Ganta, 1 ♂, II, 2 ♂, III, 1 ♂, IV, 2 ♂, V, 1 ♂, 2 ♀, VI, 3 ♀, VII, 1 ♂, X, 1 ♂, XII; Wanau Forest, 1 ♂, 1 ♀, I; Zorzor, 3 ♂, 1 ♀, XI, 1 ♂, XII (Fox); eastern Liberia, 3 ♂, 1 ♀, II, IV, V (Condamin, 1951); Buttikofer (1890); Sharpe (1906) from Reynolds collection.

Amauris tartarea tartarea Mabille

Amauris tartarea Mabille, 1876a: 199 (Landana, Portuguese Congo).
=*Papilio enceladus*: Brown, 1776 (not Linné): 18; pl. 9.
=*Papilio damocles*: de Bouvier, 1805 (not Fabricius): 239; pl. 6, figs. 3a and 3b.
=*Amauris psyttalea* Plötz, 1880: 189 (Aburi).

The synonymy cited above may help clear up the confusion found in so many references as to the senior valid name for this species (see Talbot, 1940). The species is found in the Guinean and East African subregions from Sierra Leone to Kenya and Tanganyika. Talbot (1940) listed two subspecies, one in Tanganyika and the nominate subspecies from the rest of the range. All specimens I have seen from Occidental Africa have on the hindwing a creamy white patch margined with reddish brown. The species is distinguished from other

members of the genus found in Liberia by the fact that the diagonal band across the forewing apex is broken into two or three spots, the patch at the hind margin is absent, but there are two white spots in the discal area and there are two or three small white dots at the outer margin. In contrast to the preceding species, *tartarea* prefers primary forest and is commoner in the interior of Liberia.

Liberia: Harbel, 1 ♂, I; Kpain, 1 ♂, V; Ganta, 1 ♂, V, 1 ♀, VI, 2 ♂, VII, 1 ♂, XI; Wanau Forest, 1 ♂, 1 ♀, I, 3 ♀, II, 1 ♂, 1 ♀, III; Zorzor, 2 ♂, V, 1 ♂, XI; Wozi, 1 ♀, XI (Fox); Cape Palmas, 1 ♂, 1 ♀ (Naysmith); eastern Liberia, 7 ♂, 8 ♀, II, IV, V, (Condamin, 1951, as *damocles*); Sharpe (1906, as *enceladus* and *damocles*).

Guinea: Wangazi range on road from Macenta to 'Nzerekore, 1 ♂, IV (Fox).

Amauris hecate hecate (Butler)

Danais hecate Butler, 1866a: 174 (Ashanti).

The nominate subspecies is found throughout the Guinean subregion as far east as Uganda and another subspecies is present in Abyssinia. The markings of Liberian specimens are much like the preceding, but the diagonal band at the apex of the forewing is smaller, the two discal spots are confluent (separated by a black bar over cubitus in *tartarea*) and the light patch on the hindwing is restricted to the base and is smaller. It appears to be the rarest of the four *Amauris* in Liberia and flies only during the dry season.

Liberia: Harbel, 1 ♂, XII; Ganta, 3 ♂, VI, 1 ♂, VII; Wanau, 1 ♀, III (Fox); Grand Cess, 2 ♂, IV; no locality, 1 ♂, IV (Naysmith); Tchien District, 5 ♀, III, IV (Condamin, 1951); Sharpe (1906) from Reynolds material.

Amauris egialea egialea (Cramer)

Papilio egialea Cramer, 1777 [1775-1791], 2: 146; pl. 192, fig. D (Sierra Leone).
=*Papilio damocles* Fabricius, 1793 [1793-1794], (1): 41 (Asia and Africa).

Talbot (1940) found that the nominate subspecies is Occidental, while subspecies *hyalites* inhabits the Equatorial forests from Cameroons to Angola and Uganda. In Liberia this species is very similar to *A. tartarea* but the hindwing creamy patch is larger and covers most

of the wing and the forewing margin has three round white spots of uniform size and larger than those of *tartarea*. At the coast I found *egialea* flying in both the dry and the rainy seasons, always quite common — far more so than material collected would indicate — but the species appears to be rare in the interior.

Liberia: Harbel, 4 ♂, 4 ♀, I, 18 ♂, 3 ♀, II, 4 ♂, 3 ♀, III, 2 ♀, V, 1 ♀, VIII, 6 ♂, X, 7 ♂, 2 ♀, XI; Wanau Forest (in cleared land near village), 1 ♂, III, 1 ♂, V; Zorzor, 1 ♂, XI (Fox); Buttikofer (1890); Sharpe (1906) from Whicker collection; Talbot (1940), with no data but probably also the Whicker material.

Family Satyridae

This family has not had the benefit of a comprehensive, world-wide generic revision, so that there is disagreement among specialists as to the number of genera found in Africa. I have followed the decisions of Condamin (1960, 1961, 1963b) regarding the proper disposal of the African species formerly assigned to *Mycalesis,* and I agree with his action (1963b) in reducing *Gnophodes* to a subgenus of *Melantis*. I do not concur with him that *Ypthimorpha* should be separated from *Ypthima*. Finally, I can find no sound basis for continuing to separate African *Elymniopsis* from Asiatic *Elymnias* and I reduce the former to the synonymy.

About fifteen genera occur in Africa and six of them enter the Liberian fauna. Three of these genera are endemic to Africa while the other three are primarily Indo-Australian.

It appears that the Satyridae have not appealed to the few collectors who have worked in Liberia. Sharpe (1906), who included identifications from Buttikofer (1890), listed thirteen species, but with the elimination of synonyms and seasonal forms, they are found to represent only ten. Collections by the Dekeyser-Holas Expedition (Condamin, 1951) in eastern Liberia brought the total to sixteen species. My collection included fifteen of these and added eleven more not previously recorded. In addition to the twenty-seven species now known to occur in Liberia, ten others are included in the following list because they have been taken in the Nimba country (Condamin, 1963b) or other immediately adjacent areas and will almost certainly be found within Liberia.

Genus **ELYMNIAS** Hübner

Elymnias Hübner, 1818 [1818-1825]: 12. Type-species: *Elymnias jynx* Hübner, designated by Hemming, 1943.
=*Elymniopsis* Fruhstorfer, 1907: 171, 173-174. Type-species: *Papilio phegea* Fabricius (=*Elymniopsis lise* Hemming), designated by Hemming, 1943.

In separating the African species from Asiatic *Elymnias,* Fruhstorfer gave as the primary diagnostic differences the length of the upper discocellular vein of the hindwing — short in African, long in Asiatic species — and the shape of the tip of the humeral vein — drawn to a point in African, blunt in Asiatic species. The length of the upper discocellular vein basically expresses the position of the free segment of the radial vein, which branches about a third of the distance toward the apex in *lise* but closer to the base in most of the Asiatic species. There is variation from species to species, however, and the arrangement of these veins in *E. vasudeva* of the Orient closely approaches that of *lise* of Africa. In *lise* one finds the culmination in this respect, of a trend easily noticed in the rest of the genus. But even were these venational differences sharply drawn and consistent, it is doubtful that maintaining *Elymniopsis* as a distinct genus would be desirable in view of the very large number of structural similarities among all the species, both Asiatic and African. Were other genera to be divided on such grounds, most large genera of the Satyridae could readily be made into half a dozen each and relationships would become badly obscured. The single African species of *Elymnias* is quite obviously an off-shoot of the Asiatic fauna.

Elymnias bammakoo (Westwood and Hewitson)

Melantis bammakoo Westwood and Hewitson, 1851 [1846-1852]: 405; pl. 68, fig. 3 (Ashanti).
=*Papilio phegea* Fabricius, 1793 [1793-1794], (1): 132 (India), preoccupied by *Papilio phegea* Borkhausen, 1788.
=*Elymniopsis lise* Hemming, 1960: 30, proposed to replace *Papilio phegea* Fabricius.

The nominate subspecies is distributed throughout the forests of the Guinean subregion, with another subspecies found in Uganda. The entire species is subject to striking, contrasting color variation: the bands and spots may be orange on both wings (*lise*) or white on both wings (*bammakoo*). These two variations usually have been recognized as species, since there are males and females of both vari-

ants. Some combinations of the two basic color patterns have been named, as the forewing may be of one color, the hindwing the other. In Liberia both variations fly together, particularly in secondary bush or open forest, and I took several copulating pairs of which the sexes were of opposite coloring. Furthermore, one of the females from Harbel has white spots on the forewings but the patches on the hindwings are orange with white centers. Obviously *lise* and *bammakoo* are not different species, a conclusion fully supported by study of male genitalia from a series of localities including Liberia, Cameroons and Uganda.

Liberia: Harbel, 3 ♂, 2 ♀, I, 5 ♂, 4 ♀, II, 3 ♂, 1 ♀, III, 1 ♂, 2 ♀, V, 1 ♂, VI, 4 ♂, 1 ♀, X, 3 ♂, 2 ♀, XI, 2 ♂, 2 ♀, XII; Fish Lake, 1 ♂, I; Ganta, 2 ♂, V, 2 ♂, 3 ♀, VI, 1 ♂, VII, 1 ♀, X; Wanau Forest, 8 ♂, III; Zorzor, 1 ♂, XI, 1 ♂, XII; Yendamalahoun, 2 ♂, IV (Fox); eastern Liberia, 15 specimens II, V (Condamin, 1951); Buttikofer (1890); Sharpe (1906).

Genus **MELANTIS** Fabricius

Melantis Fabricius, 1807: 282. Type-species: *Papilio leda* Linné, designated by Butler, 1868.
=*Gnophodes* Doubleday, 1851 [1846-1852]: 363. Type-species: *Gnophodes parmeno* Doubleday and Hewitson, by monotypy.

Condamin (1963b) commented that the differences between *Melantis* and *Gnophodes* are minimal and that the male genitalia of the two type species are nearly identical; he reduced *Gnophodes* to the status of a subgenus on the basis of minor differences in venation. These characters appear to me to be of little worth and I prefer to relegate the Doubleday genus to synonymy.

The genus occurs in both Indo-Australian and African regions. Three species enter the Liberian fauna.

Melantis leda leda Drury

Papilio leda Drury, 1773 [1770-1782], 1: 29-30; pl. 15, figs. 5 and 6 (China).
=*Melantis leda africana* Fruhstrofer, 1908: 87.

The only reliable character for separating *africana* from *leda* is to be found on the locality label. The species is distributed from Tahiti and northern Australia throughout tropical Asia and Africa, with

some subspecies in the Indo-Australian region. It has not been recorded previously from Liberia, but has been known from all surrounding areas.

Liberia: Harbel, 1 ♀, III, 1 ♂, 1 ♀, XII; Ganta, 1 ♂, 1 ♀, III, 1 ♂, VI, 1 ♂, XI (Fox).

Melantis parmeno parmeno (Doubleday and Hewitson)

Gnophodes parmeno Doubleday and Hewitson, 1851 [1846-1852]: 363; pl. 61, fig. 2 (Sierra Leone).

The species is distributed throughout forested tropical Africa and the nominate subspecies occurs in the Guinean subregion. One of the females (Harbel, October) was attracted to light at night.

Liberia: Harbel, 1 ♀, V, 1 ♂, 1 ♀, X; Ganta, 1 ♂, III, 1 ♂, VI; Yendamalahoun, 1 ♂, IV (Fox); Sharpe (1906) from Reynolds Collection.

Melantis chelys (Fabricius)

Papilio chelys Fabricius, 1793 [1793-1794], (1): 80 (India).

This species also is found in the forests of the Guinean subregion as far east as Uganda. The four specimens listed below, the first record specifically from Liberia, were all captured in the open woods behind the mission station in Ganta.

Liberia: Ganta, 1 ♂, III, 2 ♂, 1 ♀, VI (Fox).

Genus **BICYCLUS** Kirby

Bicyclus Kirby, 1871: 47, to replace *Idiomorphus* Doumet, 1861.
=*Idiomorphus* Doumet, 1861: 174. Type-species: *Idiomorphus hewitsonii* Doumet, by monotypy; preoccupied.

Condamin (1961) discusses the reasons for separating African *Bicyclus* from Indo-Australian *Mycalesis*. He is at present engaged in a revision of *Bicyclus*, has verified the determinations of my Liberian material and has kindly made available to me a wealth of information; the species are listed below according to his advice. Condamin (private communication) recognizes 71 species in this genus, of which 19 are known to occur in Liberia and another eight possibly will be found there.

Bicyclus ephorus ephorus Weymer

Bicyclus ephorus Weymer, 1892: 79-82 (Addah [Ada], Ghana).

The species occurs throughout the Guinean subregion, the nominate subspecies being endemic to Occidental Africa. Although not previously recorded from Liberia by name, *ephorus* probably was the basis for Buttikofer's record (1890) of *sebatus*, a similar species which is confined to Equitorial Africa.

Liberia: Wanau Forest, 1 ♀ (Fox).

Bicyclus zinebi (Butler)

Idiomorphus zinebi Butler, 1869a: 19; pl. 9; fig. 4 (Old Calabar).

The species is endemic to Occidental Africa. The specimens listed below all were taken in thin patches of forest surrounded by secondary bush and agricultural land. Although I found *zinebi* only near the coast, Condamin (1963b) lists it from the Nimba country. It has not been found previously in Liberia.

Liberia: Harbel, 1 ♂, I, 1 ♂, V, 1 ♂, VI, 2 ♂, VIII, 2 ♂, X, 1 ♀, XII; Fish Lake, 1 ♂, I (Fox).

Bicyclus sangmelinae Condamin

Bicyclus sangmelinae Condamin, 1963b: 435-436; figs. 1b and 2b (Mt. Nimba).

Condamin attributed the name to Neustetter, based on the label on a "type" in the Vienna Museum, but Neustetter never published a description. Fortunately, Condamin (1963b) included in his discussion a description and a comparison with *B. mesogenus* and figured the venation, the configuration of the median band of the underside and the male genitalia, so that his publication of *sangmelinae* qualifies as an original description. The two males and two females from Mt. Nimba which he mentions become the type series. According to Condamin, the species is distributed from Sierra Leone to Cameroon.

Liberia: Harbel, 1 ♂, IV, 3 ♂, 1 ♀, V, 1 ♀, VI, 1 ♂, VII, 1 ♂, VIII, 1 ♂, 1 ♀, IX, 1 ♂, X, 1 ♂, XI, 2 ♂, XII; Ganta, 2 ♂, II, 2 ♂, V; Zorzor, 4 ♂, 1 ♀, XI; Yendamalahoun, 1 ♂, 1 ♀, IV (Fox); no data, 1 ♂, 1 ♀ (Good).

Bicyclus sambulos (Hewitson)

Mycalesis sambulos Hewitson, 1876 [1852-1876], 5: [59]; pl. [32], figs. 63 and 64 (Gabon).

The species is found throughout the forests of the Guinean subregion. Condamin (1963b) records *sambulos* from the Nimba country in Guinea; the record below is the first for Liberia.

Liberia: Wanau Forest, 2 ♂, X (Fox).

[**Bicyclus mandanes** (Hewitson)]

Mycalesis mandanes Hewitson, 1873 [1852-1876], 5: [58]; pl. [31], figs. 61 and 62 — (Angola and Gabon).

Condamin (private communication) advised me that this species has been taken in Guinea and it seems quite likely that it should be found in Liberia.

Bicyclus auricrudus auricrudus (Butler)

Mycalesis auricruda Butler, 1868c: 131; pl. 3, fig. 7 (Gold Coast).

The nominate subspecies is confined to Occidental Africa. I recently (1963b) described a second subspecies from the Equatorial area distributed from Cameroons to Uganda in forests.

Liberia: Ganta, 4 ♂, V, 1 ♂, 1 ♀, VI, 2 ♂, VII, 2 ♂, VIII, 1 ♂, X, 1 ♂, XI; Wanau Forest, 1 ♂, I, 1 ♂, III, 2 ♂, X; Yendamalahoun, 1 ♂, 1 ♀, IV (Fox); Diyala, 1 ♂, V (Condamin, 1951).

Bicyclus vulgaris (Butler)

Mycalesis vulgaris Butler, 1868c: 130; pl. 3, fig. 2 (Sierra Leone).

This common species is distributed from Gambia to Kenya and south to Angola. I found it absent in primary forest; all specimens were caught flying along the margins of agricultural lands, in secondary bush or at roadsides. Although it is on the wing throughout the year, no seasonal variation occurs in Liberia.

Liberia: Harbel, 1 ♀, I, 1 ♂, 3 ♀, II, 1 ♀, III, 1 ♂, 2 ♀, IV, 1 ♀, V, 2 ♂, VI, 2 ♀, VII, 1 ♀, VIII, 1 ♂, 1 ♀, IX, 1 ♂, 2 ♀, X, 2 ♂, 3 ♀, XI, 4 ♂, 1 ♀, XII; Ganta, 1 ♀, III, 1 ♂, 1 ♀, VII, 1 ♀, X (Fox), 1 ♂, X (Leland); Zorzor, 2 ♂, 3 ♀, XI; Yendamalahoun, 1 ♀, IV (Fox); eastern Liberia, 1 ♂, 2 ♀, II, III, IV (Condamin, 1951).

Bicyclus dorothea (Cramer)

Papilio dorothea Cramer, 1779 [1775-1791], 3: 19; pl. 204, figs. E and F (Sierra Leone).
=*Papilio melusina* Fabricius, 1787: 43-44 (Sierra Leone).
=*Papilio miriam* Fabricius, 1793 [1793-1794], (1): 242 ("India").
=*Mycalesis raesaces* Hewitson, 1866 [1852-1876], 3: [93-94]; pl. [47], figs. 51 and 52 (Old Calabar).

Aurivillius (1908-1925: 90) lists *Mycalesis miriam* Fabricius, *M. dorothea* Cramer and *M. melusina* Fabricius and gives the distribution of each as including Liberia. These three names are synonymous and only one species occurs in Occidental Africa (Condamin and Fox, 1964). In Liberia *B. dorothea* is one of the commonest butterflies and certainly the commonest of the Satyridae. I found it everywhere and at all times of the year. During the height of the dry season it frequently would have been possible to net hundreds in the course of a day.

Liberia: Harbel, 9 ♂, 1 ♀, I, 2 ♂, 1 ♀, II, 4 ♂, 2 ♀, III, 5 ♂, 3 ♀, IV, 5 ♂, 1 ♀, V, 3 ♂, 1 ♀, VI, 3 ♂, VII, 4 ♂, 3 ♀, VIII, 2 ♂, IX, 9 ♂, X, 22 ♂, 4 ♀, XI; Gbanga, 2 ♂, V; Kpain, 1 ♂, V; Ganta, 10 ♂, II, 21 ♂, 3 ♀, III, 17 ♂, 4 ♀, V, 10 ♂, 5 ♀, VI, 1 ♂, 2 ♀, VII, 4 ♂, VIII (Fox), 5 ♂, X (Leland), 7 ♂, 1 ♀, X, 2 ♂, XI; Wanau Forest, 4 ♂, III, 1 ♂, VIII, 3 ♂, X; Bomi Hills, 7 ♂, IV; Zorzor, 8 ♂, 1 ♀, XI; Fisabu, 3 ♂, 1 ♀, XII; Yendamalahoun, 4 ♂, 1 ♀, IV (Fox); no data, 3 ♂ (Good); eastern Liberia, II, III, IV (Condamin, 1951, as *melusina*); Buttikofer (1890); Sharpe (1906).

Bicyclus sandace (Hewitson)

Mycalesis sandace Hewitson, 1876 [1852-1876], 5: [59]; pl. [32], fig. 65 (Fernando Po).

This species is found from Senegal to Abyssinia and throughout tropical Africa. It prefers open woods, secondary bush and agricultural lands. I found it rather uncommon in the interior and absent from primary forest. Condamin (1963b) records three males from the Nimba country.

Liberia: Harbel, 3 ♂, I, 1 ♂, II, 1 ♂, V, 1 ♂, VIII, 3 ♂, IX, 3 ♀, X, 2 ♂, 1 ♀, XI, 1 ♂, XII; Fish Lake, 4 ♂, I; Ganta, 1 ♂, III, 2 ♂, VI, 1 ♂, VII; Bomi Hills, 1 ♂, IV (Fox); no data, 1 ♂ (Naysmith);

Glofake, Ziabli, 3 ♂, III, IV (Condamin, 1951); Buttikofer (1890); Sharpe (1906).

Bicyclus martius (Fabricius)

Papilio martius Fabricius, 1793 [1793-1794], (1): 219 (No locality cited).

This species prefers forest, both primary and secondary, to open agricultural areas and is distributed from Sierra Leone to Uganda.

Liberia: Harbel, 2 ♂, I, 1 ♂, II, 2 ♂, III, 1 ♂, IV, 1 ♂, 1 ♀, V, 1 ♀, VI, 1 ♀, VII, 1 ♀, VIII, 1 ♂, 2 ♀, IX, 2 ♂, 2 ♀, X, 2 ♂, XI; Ganta, 1 ♂, 1 ♀, VI, 2 ♂, 1 ♀, VII, 1 ♀, VIII (Fox); 1 ♂, X (Leland); Wanau Forest, 1 ♀, I, 1 ♂, 1 ♀, II, 2 ♂, 1 ♀, III, 1 ♂, V, 1 ♀, VIII, 3 ♀, X; Bomi Hills, 1 ♂, IV; Zorzor, 1 ♂, 1 ♀, XI; Fisabu, 1 ♀, XII; Yendamalahoun, 2 ♂, IV (Fox); Cape Palmas, 1 ♂, V (Naysmith); no data, 1 ♂ (Good); Touzon, 1 ♀, IV (Condamin, 1951, as *golo*).

Bicyclus istaris (Plötz)

Mycalesis istaris Plötz, 1880: 197 (Ashanti).

The species is distributed throughout the forests of the Guinean subregion. Condamin (1963b) records five males and five females from the Nimba country, most of the captures having been made in secondary forests and bush.

Liberia: Glofake, 2 ♂, III (Condamin, 1951).

[Bicyclus abnormis (Dudgeon)]

Mycalesis abnormis Dudgeon, 1909: 111 (Ashanti).

Condamin (1961, 1963b) notes from Tiapleu, in the Nimba country, the first female of this rare species from Occidental Africa. It is quite probable that *abnormis* occurs in Liberia.

Bicyclus madetes (Hewitson)

Mycalesis madates Hewitson, 1874d: 381 (Ashanti).
=*Mycalesis erysichton* Ehrmann, 1894: 77 (Liberia).

This species is endemic to the forests of Occidental Africa. In addition to the series from Liberia, Carnegie Museum has specimens from Guinea and Ivory Coast (exchange with I.F.A.N.), but it is not represented in the excellent collections from Cameroons.

Liberia: Harbel, 2 ♂, I, 1 ♂, III, 1 ♂, IX, 1 ♀, XI, 2 ♂, XII; Fish Lake, 2 ♂, 1 ♀, I, 1 ♂, XII; Ganta, 1 ♂, II, 2 ♂, V, 1 ♂, VII, 1 ♂, IX (Fox), 1 ♀, X (Leland); Wanau Forest, 1 ♂, 1 ♀, I, 2 ♂, II, 1 ♂, III, 1 ♂, VI, 1 ♂, VIII, 3 ♂, X; Zorzor, 2 ♂, XI; Yendamalahoun, 4 ♂, IV (Fox); Pigrinini Cess, 1 ♂, III (Naysmith), (holotype of *M. erysichton*); Touzon, 1 ♂, IV (Condamin, 1951).

[**Bicyclus technatis** (Hewitson)]

Mycalesis technatis Hewitson, 1876 [1852-1876], 5: [60]; pl. [32], fig. 67 (Gabon).

This species is included here because it was listed by Buttikofer (1890), but the record is almost certainly a misdetermination, though which of several possible species Buttikofer actually had can be decided only by re-examination of his specimens. Carnegie Museum has *technatis* from Cameroons and Angola. The species does not occur in Occidental Africa.

Bicyclus ignobilis ignobilis (Butler)

Mycalesis ignobilis Butler, 1870a: 124 (Gold Coast). 1871 [1869-1874]: 55; pl. 21, fig. 4.

The nominate subspecies is Occidental African; the Congolese subspecies has recently been described by Condamin and Fox, 1963, from a good series from Cameroon, Gabon and Congo. Condamin (1963b) records a female from primary forest in the Nimba country and the specimens listed below are the first from Liberia.

Liberia: Harbel, 1 ♂, V; Zorzor, 1 ♂, XI (Fox).

[**Bicyclus nobilis** (Aurivillius)]

Mycalesis nobilis Aurivillius, 1893: 269; pl. 6, figs. 1 and 2 (Gabon).

Condamin (1963b) notes three females from the Nimba region occurring both in primary and in secondary forest. The species is certain to be found in Liberia.

Bicyclus evadne evadne (Cramer)

Papilio evadne Cramer, 1779 [1775-1791], 3: 48; pl. 222, figs. E and F (Sierra Leone).

The species is distributed from Sierra Leone to the Congo; the

nominate subspecies is Occidental and the subspecies from the Equatorial area is *subignobilis* Strand (Fox, 1963).

Liberia: Harbel, 4 ♂, 1 ♀, I, 3 ♂, II, 2 ♂, V, 11 ♂, 3 ♀, X, 6 ♂, XI, 2 ♂, XII; Ganta, 2 ♂, II, 2 ♂, 1 ♀, III, 1 ♀, V, 2 ♂, VI, 1 ♀, VII, 1 ♂, XI; Wanau Forest, 3 ♂, I, 7 ♂, 1 ♀, II, 2 ♂, III, 7 ♂, X; Bomi Hills, 4 ♂, IV; Zorzor, 2 ♂, XI; Yendamalahoun, 1 ♂, IV (Fox); eastern Liberia, 5 ♂, 1 ♀, III, V (Condamin, 1951); Buttikofer (1890); Sharpe (1906) from Reynolds Collection.

[**Bicyclus trilophus jacksoni** Condamin]

Bicyclus trilophus jacksoni Condamin, 1961: 796-797; fig. 11 (Mamfe, [ex-British] Cameroon).

One of the paratypes of this subspecies came from the Nimba country and the species should certainly be discovered in Liberia.

Bicyclus dekeyseri (Condamin)

Mycalesis dekeyseri Condamin, 1958: 1348-1351; figs. 1 and 2 (Touzon, Liberia).
=*Mycalesis dubia*: Condamin (not Aurivillius), 1951: 790.

This Occidental species is now known to be distributed from Liberia and Guinea to Ghana. It is replaced in the Equatorial area by *B. dubia* Aurivillius. In Liberia I found *dekeyseri* in high forests, both primary and secondary, but did not happen to collect any males.

Liberia: Touzon, 1 ♂ (Condamin, 1951, 1958, holotype); Harbel, 1 ♀, V, 1 ♀, X; Ganta, 2 ♀, V, 2 ♀, VI, 1 ♀, VII; Wanau Forest, 1 ♀, X; Zorzor, 1 ♀, XI; Yendamalahoun, 1 ♀, IV (Fox); no data, 1 ♀ (Naysmith).

Bicyclus safitza (Hewitson)

Mycalesis safitza Hewitson, 1851 [*in* Doubleday, Hewitson and Westwood, 1846-1852]: 394; pl. 66, fig. 3 (Africa). 1861 [1852-1876], 3: [80]; pl. [66], fig. 3 (Africa).

The species is distributed in forests and savanna woodlands everywhere in tropical Africa. It is surprising that the pair I found should be the first record from Liberia.

Liberia: Ganta, 1 ♂, II, 1 ♀, V (Fox).

[**Bicyclus campus** (Karsch)]

Mycalesis campa Karsch, 1893: 206; pl. 5, fig. 4 (Togo).

This species ranges from Guinea to Kenya and Tanganyika. Condamin (1963b) records a male from savanna in the Nimba region of Guinea and it is possible that *campus* will be found in Liberia since savanna species sometimes occur in areas which have been heavily cut over for farming.

[**Bicyclus milyas** (Hewitson)]

Mycalesis milyas Hewitson, 1864 [1852-1876], 3: [89]; pl. [45], fig. 34 (White Nile).

This is a savanna species ranging from Gambia to Abyssinia and Uganda. A male has been recorded from the Nimba region (Condamin, 1963b) and, along with the previous species, *milyas* might occur in Liberia.

Bicyclus funebris (Guérin-Méneville)

Satyrus funebris Guérin-Méneville, 1844: 488 (Senegal).

A woodland species, distributed from Gambia to Uganda and Rhodesia, is here recorded for the first time from Liberia.

Liberia: Harbel, 1 ♀, XI (Fox).

Bicyclus taenias (Hewitson)

Mycalesis taenias Hewitson, 1876 [1852-1876], 5: [59]-[60]; pl. [32], fig. 66 (Gabon).

The species occurs throughout the Guinean subregion in primary and secondary forest as well as along the margins of agricultural areas.

Liberia: Harbel, 1 ♂, II, 1 ♂, V, 2 ♂, VI, 1 ♂, VII, 3 ♂, VIII, 2 ♂, IX, 1 ♂, 1 ♀, X, 5 ♂, 1 ♀, XI, 1 ♂, XII, 3 ♂ without dates; Fish Lake, 1 ♂, I; Gbanga, 1 ♂, VII; Ganta, 2 ♂, 1 ♀, III, 3 ♂, V, 2 ♂, 1 ♀, VI, 1 ♀, X (Fox), 1 ♂, X (Leland); Wanau Forest, 1 ♂, I; Zorzor, 1 ♂, 1 ♀, XI; Yendamalahoun, 1 ♂, IV (Fox); Diyala, 1 ♂, V (Condamin, 1951); Buttikofer (1890).

[**Bicyclus uniformis** (Bethune-Baker)]

Mycalesis uniformis Bethune-Baker, 1908: 470 (Makala-Beni, Congo).

Condamin (1963b) gives the distribution of this species from Ghana to Uganda and records a female from secondary forest in the

Nimba region near the Guinea-Ivory Coast frontier. *B. uniformis* probably occurs in Liberia.

Bicyclus procorus (Karsch)

Mycalesis procora Karsch, 1893: 210 (Togo).

The species occurs from the Nimba region to Uganda. The record of *B. sciathis* (Hewitson) by Buttikofer (1890) which was repeated by Aurivillius (1893, 1898, 1908-1925) and by Sharpe (1906), was probably based on a misidentification of *procorus*. The two species are similar, but *sciathis* is known only from the Equatorial forests and it probably does not occur in the Occidental area. Other than this possible misidentification, *procorus* previously has not been recorded from Liberia.

Liberia: Ganta, 1 ♀, VI; Wanau Forest, 1 ♀, II; Zorzor, 1 ♀, XI; Yendamalahoun, 1 ♀, IV (Fox).

Genus **HALLELESIS** Condamin

Hallelesis Condamin, 1960: 1252-1258. Type-species: *Papilio halyma* Fabricius, designated by Condamin, 1963b: 433-434, 440.

The genus differs from *Bicyclus* by the presence of a hair pencil between the anal veins on the upperside of male hindwings and, especially, by the presence of coremata (tufts of hair) on the male genitalia. Only one of the two species of this genus enters into the Liberian fauna.

Hallelesis halyma (Fabricius)

Papilio halyma Fabricius, 1793 [1793-1794], (1): 243 (India).
=*Mycalesis macrones* Hewitson, 1873 [1852-1876], 5: [58]; pl. [31], fig. 60 (West Africa).

The species is endemic to Occidental Africa and is not known east of Ghana. In Liberia it appears to be more common in the hinterland.

Liberia: Harbel, 1 ♂, IV, 1 ♂, 1 ♀, XI, 1 ♀, XII, 1 ♂, no date; Fish Lake, 2 ♂, XII; Kpain, 1 ♂, V, 2 ♂, X; Ganta, 4 ♂, II, 1 ♂, III, 5 ♂, 1 ♀, V, 2 ♂, 2 ♀, VI, 1 ♂, 1 ♀, VII, 1 ♂, XI, 1 ♂, XII; Wanau Forest, 2 ♀, I, 2 ♂, II, 1 ♂, 6 ♀, III, 1 ♂, VI, 3 ♂, X; Bomi Hills, 3 ♂, IV; Zorzor, 1 ♂, XI (Fox); eastern Liberia, 8 ♂, III, IV, V (Condamin, 1951); Buttikofer (1890); Sharpe (1906).

Genus **HENOTESIA** Butler

Henotesia Butler, 1879b: 228. Type-species: *Mycalesis anganavo* Ward, by monotypy.

This genus is represented by a number of species in East and Equatorial Africa and on Madagascar and Mauritius, but only three occur in Occidental Africa. One is known from Liberia and the other two probably will be found there.

[**Henotesia elisi** (Karsch)]

Mycalesis elisi Karsch, 1893: 209; pl. 5, fig. 8 (Togo).

Condamin (1963b) records a series from both forest and savanna situations in the Nimba region; the species probably occurs also in Liberia.

[**Henotesia peitho** (Plötz)]

Mycalesis peitho Plötz, 1880: 197 (Gold Coast).

This species is distributed from Guinea to Gabon and Condamin (1963b) records a number of specimens collected in both primary and secondary forests in the Nimba region. It should be found in Liberia.

Henotesia decira (Plötz)

Mycalesis peitho var. *decira* Plötz, 1880: 198 (Gold Coast).

Described as a "variety" of *peitho* and so treated by Aurivillius (1908-1925: 99), *decira* is a valid and distinct species which may be recognized easily by the position of the median line on the undersides of the wings — almost straight in *peitho,* but arched in *decira.* This species has not been recorded previously from Liberia.

Liberia: Yendamalahoun, 1 ♂, IV (Fox).

Genus **YPTHIMA** Hübner

Ypthima Hübner, 1818 [1818-1825]: 17. Type-species: *Papilio philomela* Linné, by monotypy. Hemming, 1937: 149.

= *Ypthimomorpha* Van Son, 1955: 21, 158. Type-species: *Ypthima itonia* Hewitson, by monotypy. Condamin, 1963b: 433, 442.

This genus is well represented in the Indo-Australian region. In

Africa the richest variety is found in East and Central Africa and on Madagascar, but only three species occur or might occur in Liberia. *Ypthimomorpha* was separated from *Ypthima* on the basis of the position of the branching of R_1 of the forewing and some minor differences in the genitalia and there seems no sound reason for preserving the name.

Ypthima doleta Kirby

Ypthima doleta Kirby, 1880: 336.

This species is known from the Guinean subregion as far south as Angola. In Liberia I found it in most situations except the high, primitive forest.

Liberia: Harbel, 7 ♂, I, 5 ♂, 1 ♀, II, 5 ♂, 1 ♀, III, 1 ♂, IV, 1 ♀, VIII, 6 ♂, 1 ♀, XI, 2 ♂, XII; Fish Lake, 3 ♂, XII; Kpain, 2 ♂, V; Ganta, 2 ♂, V, 1 ♂, VI, 1 ♂, VII, 1 ♂, 1 ♀, VIII, 6 ♂, 1 ♀, X; Bomi Hills, 1 ♂, IV; Zorzor, 3 ♂, 4 ♀, XI; Fisabu, 1 ♂, XII; Yendamalahoun, 6 ♂, IV (Fox); Cape Palmas, 1 ♂, IX (Good); Bigtown, 1 ♂, 2 ♀ (Naysmith); eastern Liberia, 7 specimens, III, IV, V (Condamin, 1951); Buttikofer (1890).

Ypthima impura Elwes and Edwards

Ypthima impura Elwes and Edwards, 1893: 23; pl. 3, fig. 48 (Angola).

Aurivillius (1908-1925: 116) gave the distribution of this species as Gabon, Angola and East Africa. Condamin (1963b) found it to be common in the Nimba country. The specimens listed below, the first recorded from Liberia, were taken in primitive forests.

Liberia: Wanau Forest, 1 ♂, X; Yendamalahoun, 1 ♂, 1 ♀, IV (Fox).

Ypthima itonia Hewitson

Ypthima itonia Hewitson, 1865: 287; pl. 18, fig. 13 (White Nile).

The species is found from Senegal to Abyssinia to South Africa but has not been previously recorded from Liberia.

Liberia: Harbel, 1 ♂, I, 2 ♂, V, 1 ♂, VII, 1 ♂, X; Ganta, 1 ♀, VI, 1 ♂, VII; Bomi Hills, 1 ♂, IV (Fox).

Family Nymphalidae

The Nymphalidae is one of the largest of the butterfly families. In recent years there has been no comprehensive, world-wide survey of the genera and specialists have handled the family in a diversity of ways. The classification used in Seitz cannot be regarded as definitive because unfortunately, each major fauna was dealt with separately and taxonomic treatment by the various authors was exceedingly uneven, with major inconsistencies both in biological concepts and in nomenclature.

On the whole, the African fauna was treated a little more ably than the Indo-Australian or the American faunae, though Aurivillius seemed to be little concerned with major classification or generic nomenclature. Despite these shortcomings, the classification used by Aurivillius for the African butterflies is followed in its main outlines in this paper. His subfamilies are here reduced to tribes, the acraeids are treated as a subfamily and the genus *Libythea* is removed from its uncomfortable position as a subfamily of Erycinidae and made a subfamily of the Nymphalidae.

On a world-wide basis, I find that the Nymphalidae should be divided into five subfamilies. The Heliconiinae are exclusively Neotropic and the Amathusiinae are found in both the Neotropic and Indo-Australian regions. In Africa the Acraeinae, Nymphalinae and Libytheinae are represented, and all three subfamilies occur in Liberia.

Subfamily Acraeinae

Since this subfamily retains the discocellular cross veins, it probably is a little more primitive than the Nymphalinae. The Acraeinae comprise seven genera, of which one is peculiar to Madagascar and two others, both represented in Liberia, occur on the African continent.

Genus **BEMATISTES** Hemming

Bematistes Hemming, 1935: 374, 435. Type-species: *Papilio umbra* Drury, by original designation.
=*Planema*: of authors, not Doubleday.

The insects belonging to this genus have for many years been placed in *Planema* through an oversight: for example, by Aurivillius (1908-

1925). Because the type of genus *Planema* Doubleday is a member of the genus *Acraea* (see below), the former name is a junior synonym of the latter.

The genus is peculiarly African and exhibits a high degree of endemicity. Four of the six species now known to occur in Liberia have endemic Occidental subspecies, one species apparently is entirely confined to the Occidental area and only one is found in throughout the Guinean subregion. I found all four of the previously known species and added two new records to the Liberian list.

Bematistes vestalis vestalis (C. and R. Felder)

Acraea vestalis C. and R. Felder, 1865 [1864-1867]: pl. 46, figs. 12 and 13; 1867: 369 (Guinea).

The nominate subspecies is endemic to Occidental Africa and another subspecies occurs in the Equatorial area.

Liberia: Harbel, 1 ♂, II; Fish Lake, 1 ♂, I; Ganta, 1 ♂, V; Wanau Forest, 1 ♂, 2 ♀, I, 1 ♂, 2 ♀, II, 4 ♂, III, 5 ♂, X (Fox); no data, 2 ♂ (Good); eastern Liberia (Condamin, 1951); Sharpe (1906) from Whicker Collection.

Bematistes macaria macaria (Fabricius)

Papilio macaria Fabricius, 1793 [1793-1794] (1): 174 (No type locality).

B. m. hewitsoni (Aurivillius) occurs in Nigeria and *B. m. macaroides* (Aurivillius) in Cameroons; the nominate subspecies is endemic to Occidental Africa. It has not heretofore been recorded in Liberia.

Liberia: Harbel, 1 ♂, I, 1 ♂, III; St. Paul River at Zorzor Road, 1 ♂, V (Fox).

Bematistes alcinoe alcinoe (C. and R. Felder)

Acraea alcinoe C. and R. Felder, 1865 [1864-1867]: pl. 46, figs. 12, 13; 1867: 368 (Northwest Africa).
=*Papilio euryta* de Beauvier (not Linné), 1821: 262; pl. 7, fig. 4.

This is another subspecies endemic to Occidental Africa. I found it only in forests and woods.

Liberia: Harbel, 1 ♀, I; Ganta, 1 ♂, III; Wanau Forest, 3 ♂, II, 1 ♀, X (Fox); Buttikofer (1890) as *euryta*.

Bematistes umbra (Drury)

Papilio umbra Drury, 1782 [1770-1782], 3: 23; pl. 18, figs. 1, 2 (Sierra Leone).

Aurivillius (1908-1925: 241) seemed to be uncertain about this species and attempted to relate it to Cameroon forms (which were more familiar to him than Occidental forms), but apparently *umbra* occurs only in Occidental Africa.

Liberia: Harbel, 1 ♂, III, 2 ♂, XI, 1 ♂, XII; Ganta, 1 ♀, II, 2 ♀, VI; Wanau Forest, 1 ♂, 1 ♀, X (Fox); Pigrinini Cess, 1 ♀ (Naysmith); Sharpe (1906) from Whicker material.

Bematistes consanguinea sartina (Jordan)

Planema consanguinea sartina Jordan, 1910: 462 (Bansu, Gold Coast).

The nominate subspecies occurs from eastern Nigeria south and west through the Equatorial forest; *sartina* is Occidental. In males the orange transverse band of the forewing is narrower and the black hindwing margin is wider than in the nominate subspecies. The series below, apparently the first record from Liberia, was taken principally at flowering trees.

Liberia: Harbel, 1 ♀, I, 2 ♂, II, 1 ♂, III, 1 ♀, VI, 1 ♀, IX, 1 ♂, X, 1 ♂, XII (Fox).

Bematistes epaea epaea (Cramer)

Papilio epaea Cramer, 1779 [1775-1791], 3: 64; pl. 230, figs. B, C (Sierra Leone).
=*Papilio gea* Fabricius, 1781, 2: 32 (Equatorial Africa).

This is the commonest species in Liberia and flies in secondary forest and near agricultural lands. The nominate subspecies is found throughout the Guinean subregion.

Liberia: Harbel, 9 ♂, 7 ♀, I, 35 ♂, 3 ♀, II, 4 ♂, 2 ♀, III, 3 ♂, 1 ♀, IV, 2 ♂, 1 ♀, V, 1 ♂, 1 ♀, VI, 2 ♂, VII, 2 ♂, 1 ♀, VIII, 3 ♂, 1 ♀, X, 5 ♂, 2 ♀, XI, 8 ♂, 1 ♀, XII, 1 ♀ no date; Kpain, 1 ♂, V; Ganta, 1 ♀, IV, 3 ♀, V, 4 ♂, 3 ♀, VI, 3 ♀, VII, 1 ♀, VIII, 1 ♀, X, 1 ♂, XII; Wanau Forest, 1 ♂, 1 ♀, I, 1 ♂, II, 3 ♀, X; St. Paul River at Zorzor Road, 1 ♀, II, 1 ♀, III, 1 ♀, V; Zorzor, 1 ♂, 1 ♀, XI (Fox); eastern Liberia, 2 ♂, 3 ♀, III, IV, V (Condamin, 1951); Buttikofer (1890) and Sharpe (1906) as *gea*.

Genus **ACRAEA** Fabricius

Acraea Fabricius, 1807: 284. Type-species: *Papilio horta* Linné, designated by Crotch, 1872.
=*Planema* Doubleday, 1848 [1846-1852]: 140. Type-species: *Acraea lycoa* Godart, designated by Scudder, 1875.

Acraea, while represented in the Indo-Australian region by several species, is typically African and Aurivillius (1908-1925) listed 137 species for the Ethiopian fauna. Sharpe (1906) recorded eight species, along with three named color variants, from Liberia. Condamin (1951) added two more species and my own collecting included an additional twelve, bringing the known total to 22. Two other species, both known from Sierra Leone, ought to be found in Liberia.

Endemicity is not nearly so marked in Occidental *Acraea* as in *Bematistes.* Only eight of the species listed below have subspecies endemic to the area; the other 16 are distributed throughout the forested regions from Sierra Leone to Uganda.

Acraea alciope Hewitson

Acraea alciope Hewitson, 1852 [1852-1876], 1: [57-58]; pl. [29], figs. 4 (♀) and 5 (variant ♂) (West Africa).

This species is found everywhere in the forested areas of the Guinean subregion. Although there are some striking color variants, especially in females, the entire African population appears to be a single subspecies. I found it commonest at the beginning of the dry season. *A. alciope* has not been recorded previously from Liberia.

Liberia: Harbel, 1 ♂, 1 ♀, XI; Kpain, 1 ♂, X; Ganta, 2 ♂, X, 1 ♂, XII; Wanau Forest, 11 ♂, 1 ♀, I, 1 ♀ (worn) II; 1 ♂, IV; 5 ♂, VI; 8 ♂, 6 ♀, X; Zorzor (in forest), 3 ♂, 1 ♀, XI (Fox).

Acraea jodutta jodutta (Fabricius)

Papilio jodutta Fabricius, 1793 [1793-1794], (1): 175 (No type locality).

The nominate subspecies occurs, with numerous variant females, from Sierra Leone to Uganda and Nyasaland and a different subspecies is found in Abyssinia. This is a new addition to the Liberian fauna.

Liberia: Wanau Forest, 1 ♂, VI; Yendamalahoun, 1 ♂, IV (Fox).

Acraea lycoa lycoa Latreille

Acraea lycoa Latreille, 1820 [1819-1823]: 229, 239 (Africa).

The species is distributed from Sierra Leone to Kenya with the nominate subspecies endemic to Occidental Africa.

Liberia: Harbel, 1 ♀, XI; Gbanga, 1 ♀, X; Ganta, 1 ♂, 1 ♀, VII; Wanau Forest, 1 ♂, 2 ♀, I, 1 ♂, 1 ♀, X (Fox); eastern Liberia, III (Condamin, 1951).

Acraea circeis (Drury)

Papilio circeis Drury, 1782 [1770-1782], 3: 24; pl. 18, figs. 5 and 6 (Sierra Leone).

The series from Cameroons in Carnegie Museum agrees exactly with specimens from Liberia. The species is distributed throughout the Guinean subregion. I found it only in the primitive forest, a new record for Liberia.

Liberia: Wanau Forest, 2 ♂, VI, 4 ♂, X; Zorzor (forest on east bank of Via River), 2 ♂, XI (Fox).

Acraea parrhasia (Fabricius)

Papilio parrhasia Fabricius, 1793 [1793-1794], (1): 175-176 ("India").

Distributed from Sierra Leone to the Congo, this species has not been recorded previously from Liberia.

Liberia: Wanau Forest, 1 ♂, X (Fox); Cape Palmas, 1 ♀ (Naysmith).

[**Acraea orina** Hewitson]

Acraea orina Hewitson, 1874: 130. 1875 [1852-1876], 5: [27]; pl. [14], figs. 43, 48 (Fernando Po).

The nominate subspecies has been recorded from Sierra Leone east throughout the Guinean subregion and should be found in Liberia.

[**Acraea vesperalis** Grose-Smith]

Acraea vesperalis Grose-Smith, 1890: 466. Grose-Smith and Kirby, 1892 [1887-1902], 19: 7; pl. 3, figs. 1 and 2 (Congo).

This species undoubtedly occurs in Liberia since it is known from Sierra Leone.

Acraea pentapolis pentapolis Ward

Acraea pentapolis Ward, 1871: 60. 1873: 7; pl. 6, figs. 3 and 4 (Cameroons).

The nominate subspecies is found in the Guinean subregion. Two prominent color variants occur in both sexes; some have the disc of the hindwing yellow to white, others have the disc orange. Ten pairs from Cameroons taken *in copula* are in Carnegie Museum and demonstrate that these color differences are inherent in the normal populations. The species is here recorded from Liberia for the first time.

Liberia: Wanau Forest, 1 ♂, VI, 1 ♀, X (Fox); no data, 2 ♂ (Good).

Acraea encedon (Linné)

Papilio encedon Linné, 1758: 488 ("India").
=*Acraea encedon* ab. *alcipinna* Aurivillius, 1898: 111 (Cameroons).

This highly variable species is found throughout tropical Africa and on Madagascar.

Liberia: Zorzor, 1 ♀, II (Fox); no data, 1 ♀ (Naysmith); eastern Liberia, II to V (Condamin, 1951); Sharpe (1906).

Acraea pharsalus pharsalus Ward

Acraea pharsalus Ward, 1871: 81 (Cameroons). 1873: 8; pl. 6, figs. 7 and 8.

The nominate subspecies occurs throughout the entire Guinean subregion east to Uganda, but this is the first record from Liberia.

Liberia: Wanau Forest, 1 ♂, X; Yendamalahoun, 2 ♂, IV (Fox); Cape Palmas, 1 ♂ (Naysmith).

Guinea: Wangazi range, road from Macenta to 'Nzerekore, 1 ♂, IV (Fox).

Acraea rogersi Hewitson

Acraea rogersi Hewitson, 1873: 57 (Sierra Leone).
=*Acraea salambo* Grose-Smith, 1887, *in* Grose-Smith and Kirby, [1887-1902], 10: 5; pl. 2, figs. 3 and 4.
=*Acraea rogersi lamborni* Eltringham, 1912: 61; pl. 14, fig. 17 (Lagos).

The species is found throughout the forests of the Guinean subregion. The nominate coloring is with the ground of both wings reddish; *"salambo"* has the ground color grey-brown and *"lamborni"* has a cream colored transverse band on the hindwing while the fore-

wing is reddish. These variations appear to be infrasubspecific. *A. rogersi* has not been previously recorded from Liberia.

Liberia: Wanau Forest, 1 ♂, II (Fox); no data, 1 ♂ (Naysmith).

Acraea bonasia bonasia (Fabricius)

Papilio bonasia Fabricius, 1775: 464-465 (Sierra Leone).

The nominate subspecies occurs throughout the Guinean subregion into Uganda, with another subspecies in Abyssinia. It flies in open fields as well as in the deep forest and is exceedingly common.

Liberia: Harbel, 58 ♂, 12 ♀, I, 12 ♂, 2 ♀, II, 11 ♂, 3 ♀, III, 2 ♂, 1 ♀, IV, 1 ♂, V, 3 ♂, VII, 1 ♂, VIII, 4 ♂, X, 24 ♂, 8 ♀, XI, 14 ♂, 2 ♀, XII; Ganta, 3 ♂, II, 1 ♂, III, 7 ♂, 1 ♀, VI, 7 ♂, 1 ♀, VII, 1 ♂, VIII, 4 ♂, 1 ♀, X (Fox), 7 ♂, 2 ♀, X (Leland), 4 ♂, 1 ♀, XI, 2 ♂, XII (Fox), 1 ♂, XII (Leland); Wanau Forest, 1 ♀, I, 1 ♂, 1 ♀, II, 9 ♂, III, 27 ♂, 1 ♀, X; Zorzor, 34 ♂, 10 ♀, XI; trail near Fisabu, 7 ♂, 1 ♀, XII; Yendamalahoun, 5 ♂, IV (Fox); Sinoe, 1 ♂; Cape Palmas, 1 ♂ (Good); "Pigeninina Cess", 1 ♀ (Naysmith); no data, 3 ♂, 4 ♀ (Good, Naysmith); eastern Liberia, II, III, IV (Condamin, 1951); Sharpe (1906) from Reynolds material.

Acraea acerata Hewitson

Acraea acerata Hewitson, 1874d: 381 (Ashanti). 1875 [1852-1876], 5: [27]; pl. [14], fig. 44 (River Prah, Nigeria).

This species is found from Liberia to East Africa, with a different subspecies in Abyssinia; a number of trivial color variants have been named. The specimen listed below is the first record from Liberia and at present marks the known western limit of the range, but it no doubt occurs in Sierra Leone.

Liberia: Harbel, 1 ♂, I (Fox).

Acraea terpsichore (Linné)

Papilio terpsichore Linné, 1758: 466 ("Asia").

Throughout Africa and on Madagascar this is one of the commonest and most variable species in the genus. The very extensive material in Carnegie Museum gives no indication that geographic subspecies occur.

Liberia: Harbel, 4 ♂, I, 6 ♂, II, 1 ♂, III, 4 ♂, 2 ♀, IV, 1 ♂, V, 6 ♂, VI, 1 ♂, VII, 1 ♀, VIII, 3 ♂, 3 ♀, XI, 4 ♂, XII; Gbanga, 1 ♂, VII; Kpain, 1 ♂, 1 ♀, V, 1 ♂, X; Ganta, 2 ♂, II, 1 ♀, V, 6 ♂, 1 ♀, VI, 2 ♀, VII, 1 ♀, VIII, 2 ♂, IX (Fox), 6 ♂, 4 ♀, X (Leland), 3 ♂, 3 ♀, XI, 4 ♂, XII; Wanau Forest, 1 ♂, 1 ♀, III, 1 ♂, X; Zorzor, 1 ♂, 1 ♀, XI, 1 ♂, XII; trail near Fisabu, 2 ♂, XII (Fox); Cape Palmas, 5 ♂, 1 ♀, XI (Good); no data, 3 ♂, 1 ♀ (Naysmith); eastern Liberia, 51 specimens II to V (Condamin, 1951); Buttikofer (1890) and Sharpe (1906), including variants *"serena"* and *"eponina"*.

Acraea natalica pseudegina Westwood

Acraea pseudegina Westwood, 1852 [1846-1852]: 531 (Sierra Leone), to replace *Papilio egina*: Stoll, 1790 (not Cramer, 1775).

This subspecies is Occidental African; a second subspecies is found in the Equatorial area, represented in Carnegie Museum by long series from Cameroons, and the nominate subspecies is East African. I found this to be especially partial to flowering trees in areas disturbed by agriculture.

Liberia: Harbel, 3 ♂, 1 ♀, III, 2 ♂, 2 ♀, IV, 2 ♂, 1 ♀, V, 1 ♂, VI, 1 ♂, VII, 2 ♂, 1 ♀, XII (including a pair *in copula*); Kpain, 1 ♂, 1 ♀, V; Ganta, 2 ♂, II, 1 ♀, V, 4 ♂, 1 ♀, VI, 1 ♂, VII, 1 ♂, 1 ♀, VIII, 1 ♀, X; St. Paul River at Zorzor Road, 1 ♂, IV; Zorzor, 1 ♂, V (Fox); eastern Liberia, II, III (Condamin, 1951); Buttikofer (1890); Sharpe (1906), including her *"natalica"*.

Acraea caecilla (Fabricius)

Papilio caecillia Fabricius, 1781: 34 (Equatorial Africa).

This species is found from Senegal to East Africa, but seems to be more characteristic of open country than of the forest. It is here recorded from Liberia for the first time.

Liberia: Harbel, 1 ♂, 1 ♀, II, 1 ♂, IV, 1 ♀, VI, 1 ♀, XII (Fox).

Acraea cepheus eginopsis Aurivillius

Acraea cepheus var. *eginopsis* Aurivillius, 1898: 93 (Sierra Leone ?; Togo).

The species occurs from Liberia to Angola and East Africa, with

eginopsis confined to Occidental Africa. The specimens listed below, the first to be recorded from Liberia, were taken in open places in forests.

Liberia: Harbel, 1 ♂, II, 2 ♂, IV, 2 ♂, V; Ganta, 1 ♂, II; Wanau Forest, 1 ♂, II (Fox).

Acraea perenna Doubleday and Hewitson

Acraea perenna Doubleday and Hewitson, 1847 [1846-1852]: 141; pl. 19, fig. 4 (Ashanti).

Another new record for Liberia, this species is distributed from Sierra Leone to Angola and Kenya. Females appear to be quite unusual in collections and the Good series in Carnegie Museum from Cameroons is comprised entirely of males.

Liberia: Yendamalahoun (high forest), 1 ♂, IV (Fox).

Acraea egina egina (Cramer)

Papilio egina Cramer, 1775 [1775-1791], 1: 64; pl. 39, figs. F and G (Sierra Leone).

The nominate subspecies occurs throughout the Guinean subregion and there are other subspecies in East Africa and on some of the islands. I found it only in open places, especially in agricultural areas.

Liberia: Harbel, 2 ♂, 1 ♀, II, 1 ♂, III, 2 ♂, IV, 2 ♂, V, 3 ♂, VI, 1 ♂, VII, 1 ♂, X, 1 ♂, 2 ♀, XI, 1 ♀, XII; Kpain, 1 ♂, V; Wanau (town), 1 ♂, X (Fox); eastern Liberia, 2 ♂, 1 ♀, II, V (Condamin, 1951); Buttikofer (1890); Sharpe (1906), including her record of *A. medea,* properly the subspecies on Princes Island.

Acraea zestes zestes (Linné)

Papilio zestes Linné, 1758: 487 ("India").
=*Papilio menippe* Drury, 1782 [1770-1782], 3: 16; pl. 13, figs. 3 and 4 (Sierra Leone).

This species occurs everywhere in tropical African forests. A subspecies is endemic to Abyssinia and another inhabits southeastern Africa; the nominate subspecies is distributed from Sierra Leone to Uganda.

Liberia: Harbel, 1 ♀, II, 1 ♂, XII; Ganta, 1 ♂, V, 1 ♀, VI; Zorzor, 1 ♂, XI (Fox); Sharpe (1906) from Whicker material.

Acraea camaena (Drury)

Acraea camaena Drury, 1773 [1770-1782], 2: 12-13; pl. 7, fig. 2 (Cape Coast of Africa [Ghana]).

This is an endemic Occidental species distributed from Sierra Leone to western Nigeria and on Fernando Po. I found it on flowering trees.

Liberia: Harbel, 1 ♀, II, 1 ♀, III, 1 ♂, X, 1 ♀, XI, 1 ♀, XII; Ganta, 1 ♀, V (Fox); Cape Palmas 2 ♂, 1 ♀; no data, 1 ♂ (Naysmith); eastern Liberia, III (Condamin, 1951).

Acraea noebule seis Feisthamel

Acraea seis Feisthamel, 1850: 247 (Senegal).

This is the Occidental subspecies; the nominate subspecies is found beyond the Niger River in the Equatorial area. It is the only *Acraea* known from Liberia that I did not happen to find.

Liberia: Cape Palmas, 1 ♂, 1 ♀, IX (Good); no data, 4 ♂, 2 ♀ (Naysmith); eastern Liberia, II, III, IV (Condamin, 1951); Buttikofer (1890) and Sharpe (1906) as *A. horta*..

Acraea admatha Hewitson

Acraea admatha Hewitson, 1865 [1852-1876], 3: [15]; pl. [8], figs. 16 and 17 (Old Calabar).

The species is widely distributed in tropical Africa from Sierra Leone to Uganda and Angola, but has not previously been reported from Liberia.

Liberia: Gbanga, 1 ♂, VII; Wanau Forest, 2 ♂, 1 ♀, I, 1 ♀, II, 1 ♂, 1 ♀, III, 1 ♀, X; St. Paul River at Zorzor Road, 1 ♂, III (Fox).

Acraea quirina (Fabricius)

Papilio quirina Fabricius, 1781: 36 ("India, Madras").

This species occurs from Sierra Leone to East Africa.

Liberia: Harbel, 1 ♀, IV; Ganta, 1 ♂, II, 4 ♂, 3 ♀, V, 3 ♂, 6 ♀, VI, 1 ♂, 3 ♀, VII, 1 ♀, X, 1 ♂, XII; Wanau Forest, 1 ♂, I, 4 ♂, II, 1 ♂, 2 ♀, III, 3 ♂, VI, 3 ♂, X; St. Paul River at Zorzor Road, 1 ♀, IV; Zorzor, 4 ♂, 1 ♀, XI; Yendamalahoun, 1 ♂, IV (Fox); Buttikofer (1890); Sharpe (1906).

Subfamily NYMPHALINAE

The system of Aurivillius (1908-1925: 121-238) is followed here in its main outlines, with Aurivillius' families demoted to subfamilies and his subfamilies to tribes and with numerous corrections to generic nomenclature and synonymy. The tribes presented below are not necessarily in the logical sequence of from primitive to evolved.

Tribe CHARAXINI

The Charaxini are pantropical in distribution and include a dozen genera, three of which occur in Africa. Most species are large and colorful and have long been favorites with private collectors.

Genus **EUXANTHE** Hübner

Euxanthe Hübner, [1819] [1816-1826]: 39. Type-species: *Papilio eurinome* Cramer, by monotypy.

The genus is endemic to the Ethiopian Region. One of the six species occurs in Liberia.

Euxanthe eurinome eurinome (Cramer)

Papilio eurinome Cramer, 1775 [1775-1791], 1: 109; pl. 70, fig. A (No locality cited).

The nominate subspecies is confined to Occidental Africa with another subspecies in the Equatorial area. Its flight is clumsy and slow. I found males along trails or in clearings and females only in the deepest part of the forest. It appears to be associated with the floor rather than the canopy.

Liberia: Ganta, 1 ♂, II, 1 ♂, 2 ♀, VI, 2 ♀, VII; Wanau Forest, 1 ♂, II (Fox); Buttikofer (1890) and Sharpe (1906) as *E. ansellica* (properly the Equatorial subspecies).

Genus **CHARAXES** Ochsenheimer

Charaxes Ochsenheimer, 1816: 18. Type-species: *Papilio jasius* Linné, by monotypy.

The genus was reviewed by Rothschild and Jordan (1898-1900). The presentation below is based on Poulton (1925), which is a modification of Rothschild and Jordan. The African species currently are being monographed by Van Someren.

Buttikofer (1890) recorded three species from the Liberian fauna, Sharpe (1906) added two more and Condamin (1951) added five. My own field work in Liberia was primarily aimed at collecting the smaller, more obscure groups rather than the popular, large butterflies. The *Charaxes* I took, like the swallowtails, were mostly those that flew into my net and I expended very little effort on them. It is surprising, therefore, that I obtained seventeen species, including nine new records for Liberia. In the list below I include another twelve species which, because of known distribution in Occidental Africa, should be found in Liberia.

Charaxes varanes vologeses (Mabeille)

Palla vologeses Mabeille, 1876a: 280 (Landana, Congo).

The nominate subspecies is South African; *vologeses* is distributed throughout the Guinean subregion and East Africa but has not been previously recorded from Liberia. It is closely similar to the next species, both having the proximal parts of the wings whitish and having broad reddish brown marginal bands spotted with lighter brownish orange; *vologeses* is the paler of the two, the whitish coloring being almost silvery, and the hindwing is distinctly angled at the tip of vein Cu_2.

Liberia: Harbel, in forest near Farwein village, 1 ♂, IV (Fox).

[**Charaxes fulvescens fulvescens** (Aurivillius)]

Palla varanes var. *fulvescens* Aurivillius, 1891: 216 (Sierra Leone).

The nominate subspecies is found in the forests of the Guinean subregion, with other subspecies to the east. It differs from the preceding species in that the whitish coloring on the uppersides of the wings is creamy to ochre-white, the marginal brown is darker and the hindwing margin at the tip of Cu_2 is nearly straight, not angled. In Carnegie Museum, *fulvescens* is represented from Sierra Leone and elsewhere, and it undoubtedly occurs in Liberia, though it has not yet been recorded.

[**Charaxes candiope candiope** (Godart)]

Nymphalis candiope Godart, 1820 [1819-1823]: 353 (No locality cited).

The bases of the wings are golden, the marginal bands are black

with orange spots and the hindwing has two tails. Carnegie Museum has no specimens from Occidental Africa, but Aurivillius (1908-1925: 138) gives the distribution as from Sierra Leone to Abyssinia and Natal. It ought to be found in Liberia.

Charaxes protoclea protoclea Feisthamel

Charaxes protoclea Feisthamel, 1850: 260 (Casamance, Senegal).

In males the wings are black with broad orange bands at the margins while females have a broad white central band, narrower marginal orange, and have tails, which are lacking in males. The nominate subspecies is distributed from Senegal to Angola with other subspecies in East Africa, but it has not been previously recorded from Liberia.

Liberia: Wanau Forest, 1 ♂, V (Fox).

Guinea: Wangazi Range on road from Macenta to 'Nzerekore, 2 ♂, IV (Fox).

[**Charaxes boueti boueti** Feisthamel]

Charaxes boueti Feisthamel, 1850: 261 (Gambia).

There is a curious discontinuity, at present unexplained, in the distribution of this species. The nominate subspecies is found in the intermittant forested areas of Gambia, Senegal and Sierra Leone, and there are other subspecies in East Africa. Apparently it is missing from the high forests of the Guinean subregion, but it may have been overlooked. Because of its presence in Sierra Leone, it is possible that it will be found in Liberia.

Charaxes cynthia cynthia Butler

Charaxes cynthia Butler, 1865: 626; pl. 36, fig. 3 (Ashanti).

This species is distributed from Sierra Leone to Angola and Kenya; the nominate subspecies is Occidental and other subspecies are found in Cameroons, the Congo and in East Africa. It has not been previously recorded from Liberia.

Liberia: Ganta, 1 ♂, III, 1 ♂, VI (Fox).

Charaxes lucretius (Cramer)

Papilio lucretius Cramer, 1775 [1775-1791], 1: 129; pl. 82, figs. E and F (Guinea).
=*Charaxes lucretius lucida* La Cerf, 1923: 366-367 (Hinterland of Liberia).

The wings of males are blackish brown with some orange-brown at the base of the forewing, as lunate spots along the margins of both wings and as a transverse band crossing both wings; in females the transverse band is yellow-white. The preceding species is somewhat similar but paler in coloring. La Cerf's name was based on a Liberian male with larger pale spots and a female from Guinea with the transverse band a little wider and of a faun color. From the series listed below and the rather long series from Cameroons in Carnegie Museum, it is evident that *lucida* pertains to an infrasubspecific variant which should not be given a distinct name under the International Code of Nomenclature — or, for that matter, on any biological basis.

Liberia: Harbel, 1 ♀, II, 1 ♂, V; Ganta, 1 ♀, III, 1 ♀, VI; Wanau, 1 ♂, II; Yendamalahoun, 1 ♂, IV (Fox); Ziabli, 1 ♂, IV (Condamin, 1951).

[**Charaxes jasius epijasius** Reiche]

Charaxes epijasius Reiche, 1850: 469; pl. 32, figs. 1 and 2 (Abyssinia).
?=*Charaxes pelias* form *liberiae* La Cerf, 1923: 365 (Liberia). Van Someren, 1963: 198, 204, 206.

This species, not yet recorded from Liberia, is distributed from Abyssinia to Senegal along the northern margins of the rainforests, and evidently in the intermittant corridor and island forests scattered in the savanna country. It quite possibly could occur in Liberia. The unique male described by La Cerf as a "form" of *pelias* is obviously an aberrational specimen and Van Someren (1963) believes it to be, in fact, *epijasius;* if so, it represents a record of that species for Liberia. Since *epijasius* is generally a savanna species, it would not be surprising to find that in the Forest Zone it would have some pattern and color differences. On the other hand, as Van Someren points out, La Cerf's specimen bears many resemblances to *C. castor* (next species). Because La Cerf's description and the photograph of his specimen (Van Someren, 1963: pl. 2, fig. 8) are surprisingly close to a male of *castor* in Carnegie Museum from Sierra Leone — and this specimen is by no means identical with *castor* from Cameroons —

there remains the possibility that *liberiae* represents a record of *castor* rather than of *epijasius*.

[**Charaxes castor castor** (Cramer)]

Papilio castor Cramer, 1775 [1775-1791], 1: 61; pl. 37, figs. C and D (Coast of Guinea).

This species occurs from Senegal to the Congo Valley in the nominate subspecies with other subspecies in East Africa. It has not been recorded as yet from Liberia, unless *C. liberiae*, discussed above, is an aberration of *castor* rather than of *epijasius*.

Charaxes brutus brutus (Cramer)

Papilio brutus Cramer, 1779 [1775-1791], 3: 82; pl. 241, figs. E and F ("Cape of Good Hope").

The nominate subspecies is confined to Occidental Africa. Despite the locality cited by Cramer, his figure of the type agrees closely with specimens from Sierra Leone and Liberia rather than with those from southern or eastern Africa. The specimen listed below, the first record for Liberia, was attracted to the lights of the cottage I used at Ganta Mission and was picked off the window screen at 9:00 p.m.

Liberia: Ganta, 1 ♂, VI (Fox).

Charaxes pollux pollux (Cramer)

Papilio pollux Cramer, 1775 [1775-1791], 1: 61; pl. 37, fig. F (Coast of Guinea).

With other subspecies in East Africa, *P. pollox* is distributed throughout the Guinean subregion in forests from Sierra Leone to Uganda, but has not previously been recorded from Liberia.

Liberia: Gbanga, 1 ♂, XII; trail near Fisabu, 1 ♂, XII (Fox).

[**Charaxes eudoxus eudoxus** (Drury)]

Papilio eudoxus Drury, 1782 [1770-1782], 3: 44; pl. 33, fig. 4 (Sierra Leone).

This species has not been recorded from Liberia, but probably occurs there. The nominate subspecies, distributed in the forests of the Guinean subregion, seems to be especially rare.

[**Charaxes numenes numenes** (Hewitson)]

Nymphalis numenes Hewitson, 1859 [1852-1876], 2: [75]-[76]; pl. [38], figs. 9, 10, 11 (Sierra Leone).

C. n. numenes probably occurs in Liberia, since it is distributed from Sierra Leone throughout the Forest Zone in the Guinean subregion.

[**Charaxes smaragdalis butleri** Rothschild and Jordan]

Charaxes smaragdalis butleri Rothschild and Jordan, 1907: 385 (Sierra Leone).

Another species that has not yet been recorded from Liberia, it is represented in Carnegie Museum from Sierra Leone. The nominate subspecies is Occidental, with other subspecies in the Equatorial area and in eastern Africa.

Charaxes tiridates tiridates (Cramer)

Papilio tiridates Cramer, 1777 [1775-1791], 2: 100; pl. 161, figs. A and B ("Java").

This is widely distributed throughout the tropical forests and is the commonest of the *Charaxes*. The uppersides of the wings are black, dotted with blue.

Liberia: Harbel, 1 ♀, II, 1 ♂, 1 ♀, V, 2 ♀, VI, 1 ♂, XI (Fox); Sharpe (1906).

[**Charaxes aemelia aemelia** Doumet]

Charaxes aemelia Doumet, 1861: 171; pl. 5, fig. 1 (Gabon).

The nominate subspecies occurs from Sierra Leone east through the Guinean subregion, with other subspecies in East Africa. No doubt it will be found in Liberia.

[**Charaxes imperialis imperialis** Butler]

Charaxes imperialis Butler, 1874b: 531; pl. 11, fig. 3 (Gold Coast).

With other subspecies to the east, the nominate subspecies occurs from Sierra Leone into the Congo Basin. It has not yet been recorded from Liberia but undoubtedly occurs there.

Charaxes eupale eupale (Drury)

Papilio eupale Drury, 1782 [1770-1782], 3: 7; pl. 6, fig. 3 (Sierra Leone).

There are three small green *Charaxes* species in Africa, but only one occurs in the Occidental area and it is endemic. I found it to be uncommon in deep forests but not unusual in open glades. In Guinea where there are cattle, I saw scores of *eupale* at fresh cow dung.

Liberia: Ganta, 2 ♂, VI, 1 ♀, VII; Wanau Forest, 2 ♂, III; St. Paul River at Zorzor Road, 1 ♂, IV; Yendamalahoun, 1 ♂, IV (Fox); eastern Liberia, III (Condamin, 1951).

Guinea: road from Macenta to 'Nzerekore, 3 ♂, IV (Fox).

Charaxes pleione (Godart)

Nymphalis pleione Godart, 1820 [1819-1823]: 366 ("Antilles").
=*Philognoma lichas* Doubleday and Hewitson, 1850 [1846-1852]: 311; pl. 49, fig. 3 (Ashanti).

This and the next species are small, brown and leaf-like. *C. pleione* has wider black margins on the uppersides of the wings and the undersides are yellow brown rather than grey brown. It occurs from Sierra Leone to Kenya.

Liberia: Eastern Liberia, 4 ♂, III, IV (Condamin, 1951).

Charaxes paphianus paphianus Ward

Charaxes paphianus Ward, 1871: 120 (Cameroons).

The nominate subspecies occurs from Sierra Leone to Angola and another subspecies is found in the upper Congo and Uganda. The series below is the first record for Liberia.

Liberia: Ganta, 1 ♂, V; Wanau Forest, 1 ♂, II, 1 ♂, III (Fox).

Charaxes zingha (Stoll)

Papilio zingha Stoll, 1780 [1775-1791], 4: 54; pl. 315, figs. B and C (Africa).

This handsome long-winged species is found from Sierra Leone to Uganda throughout the Guinean subregion. I found it in open parts of primitive forest. It has the habit of resting on a leaf beside a trail. When disturbed, it flies off like a bullet, then stops abruptly and comes to rest on another leaf; disturbed again, it darts back to its original resting place. This behavior was the undoing of the specimens re-

corded below. My Bassa assistant would station himself at one end of *zingha's* route, I at the other and one or the other of us would eventually net the specimen.

Liberia: Ganta, 1 ♀, V, 1 ♀, VI; Wanau Forest, 1 ♂, III, 1 ♀, X (Fox); Ziabli, 1 ♂, IV (Condamin, 1951).

Charaxes etesipe etesipe (Godart)

Nymphalis etesipe Godart, 1820 [1819-1823]: 355-356 (Sierra Leone).

The specimen noted below is the first record for Liberia of this species, which is distributed from Sierra Leone to Abyssinia and Madagascar.

Liberia: no data, 1 ♂ (Naysmith).

Charaxes anticlea anticlea (Drury)

Papilio anticlea Drury, 1782 [1770-1782], 3: 36; pl. 27, figs. 5 and 6 (Sierra Leone).

This species looks like a smaller version of *C. protoclea* on the upperside, but the wing shape and the pattern of the underside are quite different. The nominate subspecies is Occidental and another subspecies is found from the Niger River to Uganda. The specimens below represent the first record of *anticlea* in Liberia.

Liberia: Wanau Forest, 1 ♂, III: trail near Fisabu, 2 ♂, XII; Yendamalahoun, 1 ♂, IV (Fox).

Charaxes etheocles etheocles (Cramer)

Papilio etheocles Cramer, 1777 [1775-1791], 3: 34; pl. 119, figs. D and E (Guinea Coast near Sierra Leone).

Cramer's specimen probably came from Liberia. The nominate subspecies is distributed from Sierra Leone to East Africa with another subspecies in the dryer interior of Occidental Africa from Senegal east. Females are especially variable and I recently counted no fewer than thirty-six named infrasubspecific variants in the literature!

Liberia: Harbel, 1 ♂, IX; Ganta, 1 ♂, VI, 1 ♀ (at light) II (Fox); Monrovia, 2 ♂ (Muller in Carnegie Museum); eastern Liberia, 3 ♂, V (Condamin, 1951); Sharpe (1906).

Charaxes laodice (Drury)

Papilio laodice Drury, 1782 [1770-1782], 3: 34; pl. 26, figs. 1 and 2 (Sierra Leone).

The species is distributed in the Guinean subregion.

Liberia: Ganta, 1 ♀, VI; St. Paul River at Zorzor Road, 1 ♂, V (Fox); Touzon, 1 ♂, IV (Condamin, 1951).

[**Charaxes doubledayi** Aurivillius]

Charaxes doubledayi Aurivillius, 1898: 244 (Sierra Leone).

This species, long confused with *C. mycerina,* occurs in the forests of the Guinean subregion. *C. mycerina* has been attributed to the Occidental fauna on the basis of the record from Sierra Leone by Schaus and Clements (1893: 9), but the Clements specimens were more probably the species Aurivillius later called *doubledayi*; *mycerina* is probably confined to the Equatorial region.

Genus **PALLA** Hübner

Palla Hübner, [1819] [1816-1826]: 47. Type-species: *Papilio decius* Cramer, by monotypy.

The three species of this genus all are African. I found two of them in Liberia and the third undoubtedly occurs; they may be separated by the following key.

1. Sexes similar; white band on underside of forewing edged on each side with deep purple brown ..... *P. publius*
   Sexes dissimilar; white band on underside of forewing sharply edged only on its proximal side, the distal side bounded by the irrorated margin 2
2. Males with orange of the hindwing confined below M_3; females with white band chalky, often edged with blue ..... *P. decius*
   Males with the greater part of the light band on hindwing tawny, a small white spot above R_5; females with the white band creamy, edged with orange and with the anterior part on the forewing strongly orange ..... *P. ussheri*

[**Palla publius** Staudinger]

Palla publius Staudinger, 1892c: 267 (Sierra Leone).

Although not yet recorded from Liberia, this species should be found there, as it is known from Sierra Leone to the Congo. It is not common anywhere.

Palla decius (Cramer)

Papilio decius Cramer, 1777 [1775-1791], 2: 26; pl. 114, figs. A and B (Coast of Guinea).

=*Philognoma violinitens* Crowley, 1890: 554; pl. 18, figs. 1 and 2 (♂ Accra, ♀ Cameroons).

The species is found in forests throughout the Guinean subregion as far south as Angola. Rothschild and Jordan (1903: 332) thought that males of *violinitens* could always be distinguished but that females graded to *decius* and expressed doubt that separate species were involved. Of the three males from Wanau Forest (below) taken in March, one is *decius,* one is *violinitens* and one is an intermediate; females from Cameroons and Gabon in Carnegie Museum also intergrade between the two. Even though *violinitens* can be distinguished in most cases, it appears biologically to be merely an infrasubspecific variant of *decius.*

Liberia: Wanau Forest, 3 ♂, 1 ♀, III, 1 ♂, V, 1 ♂, X (Fox); Sharpe (1906).

Palla ussheri ussheri (Butler), 1870

Philognoma ussheri Butler, 1870a: 124 (Gold Coast).
?=*Palla moderata* Gaede, 1915: 71 (Cameroons, Sierra Leone).

The nominate subspecies is distributed from Sierra Leone to Uganda where another subspecies occurs. It has not been previously recorded from Liberia.

Liberia: Ganta, 1 ♀, V; Wanau Forest, 1 ♂, III (Fox); Grand Cess, 1 ♀ (Naysmith).

Tribe Limenitini

There are seven genera of this tribe in the Indo-Australian region and nine (called Catagrammidi by Röber (1915)) in the Americas. For the African region, Aurivillius (1908-1925) listed seventeen genera under the name "Nymphalinae" — although the genus *Nymphalis* was excluded. Except *Limenitis,* which occurs both in the Americas and on Eurasia, the genera of the Limenitini characteristically are confined to a single major faunal region, though all are very closely related phylogenetically. The elevation of this tribe to subfamilial status (as by Hemming, 1963) does not appear to be justified. Several of the traditionally recognized genera of the African fauna are not biologically separable and are synonymized below. Eleven genera occur in Liberia.

Genus **CYMOTHOE** Hübner

Cymothoe Hübner [1819] [1816-1826]: 39. Type-species: *Papilio althea* Cramer, designated by Hemming, 1943.
=*Harma* Westwood, 1850 [1846-1852]: 287-288; pl. 40. Type-species: *Harma theobene* Doubleday and Hewitson, designated by Chermock, 1950.

Scudder (1875), followed by Chermock (1950), regarded *Cymothoe* Hübner as a homonym for *Cymothoa* Fabricius, 1793. However, the current edition of the International Rules for Zoological Nomenclature (1961) states in Article 56(a) that the difference of a single letter is sufficient to prevent homonymy among generic names. Cymothoe Hübner is, therefore, available. In his review of *Cymothoe*, Overlaet (1952) separated *theobene* and made *Harma* a separate genus. Because *theobene* differs only in the shape of the wings and, as might be expected of a sound species, in the configuration of the male genitalia, it is here restored to *Cymothoe*.

Buttikofer (1890) recorded two species and Condamin (1951) added five more to the Liberia fauna. I found these seven species and two others, one of which is described below as a new subspecies.

Cymothoe theobene theobene (Doubleday and Hewitson)

Harma theobene Doubleday and Westwood, 1850 [1846-1852]: 288; pl. 40, fig. 3 (Ashanti).

This is the only member of the genus with the hindwing produced to an acute angle at the end of 1A and to a blunt angle at the end of M_3, but it is not the only *Cymothoe* with distinctive male genitalia. The wings are dark reddish brown with a light band running across both of them, yellow in males, white and broader in females; essentially the same pattern is found in a number of other species. One of the females I took at Ganta in June is strongly melanic, with the dark brown ground color obscuring the light markings. The species is distributed throughout the tropical African forests from Sierra Leone to Kenya and forms a distinct subspecies in East Africa.

Liberia: Ganta, 3 ♂, 4 ♀, VI (Fox), 1 ♀, VI (Harley, A.M.N.H.), 2 ♂, VII, 2 ♀, VIII, 1 ♂, XI; Wanau Forest, 5 ♂, I, 8 ♂, 1 ♀, III, 1 ♂, X; trail from Voinjama to Yendamalahoun, 1 ♂, IV; Yendamalahoun, 3 ♂, IV (Fox); eastern Liberia, 7 ♂, 2 ♀, IV, V (Condamin, 1951).

Guinea: Wangazi Range road from Macenta to 'Nzerekore, 1 ♂, IV (Fox).

Cymothoe egesta egesta (Cramer)

Papilio egesta Cramer, 1775 [1775-1791], 1: 72; pl. 46, figs. B, C ("Suriname").

Cramer's figure is unquestionably the Occidental subspecies, despite the locality cited; the Equatorial subspecies is *C. e. confusa* Aurivillius, represented in Carnegie Museum by extensive material from Cameroons and Gabon, with darker markings in the male and in the female with the white cross band straighter and less lunated. *C. e. egasta* is one of the larger members of this genus in Liberia and is found in deep forests.

Liberia: Ganta, 1 ♀, II, 1 ♂, III, 1 ♂, V; Wanau Forest, 2 ♂, I, 7 ♂, 2 ♀, III, 1 ♂, 1 ♀, V, 1 ♂, 1 ♀, VI, 1 ♀, X; Yendamalahoun, 1 ♂, 1 ♀, IV (Fox); Bonata 1 ♂, II (Leland, A.M.N.H.); Touzon, Diyala, 1 ♂, 3 ♀, IV, V (Condamin, 1951).

Cymothoe fumana eburnea Neustetter

Cymothoe fumana var. *eburnea* Neustetter, 1916: 105 (Liberia).

The nominate subspecies, described from "Ashanti" is found in the Equatorial forests. Subspecies *eburnea* has the yellow coloring of both sexes a pale straw rather than a bright gold, and is confined to Occidental Africa. I found it only in the hinterland in glades and along trails.

Liberia: Ganta, 1 ♂, II, 3 ♂, III; Wanau Forest, 6 ♂, 1 ♀, III (Fox); Diyala, 2 ♂, V (Condamin, 1951); no data, 2 ♂ (Neustetter, 1916).

Guinea: Wangazi range, road from Macenta to 'Nzerekore, 2 ♀, IV (Fox).

Cymothoe herminia gongoa, new subspecies (Figs. 129-132)

C. herminia (Grose-Smith) (figs. 127, 128) was described from the "Cameroons mountains" and occurs throughout the Equatorial forests. The series taken by the Lang and Chapin Expedition in the Congo was typical and a male and female were figured by Holland (1920: pl. 8, figs. 1, 4).

Figs. 127-132. Fig. 127, upperside, fig. 128, underside, *Cymothoe hermina hermina* (Grose-Smith), male, Medje, Congo. Fig. 129, upperside, fig. 130, underside, *Cymothoe hermina gongoa* new subspecies, holotype male, Wanau Forest, Liberia. Fig. 131, upperside, fig. 132, underside, *Cymothoe hermina gongoa* new subspecies, allotype female, Wanau Forest, Liberia. All natural size.

Aurivillius (1908-1925: 149) thought that *althea* (Drury) was the Occidental subspecies of *herminia,* but his figure does not agree with the female described below and is, as a matter of fact, the species later described by Westwood as *jodutta.* Note that *Papilio althea* Drury, 1782, is not the same insect figured as *Papilio althea* by Cramer in 1776 and the Drury name must fall as a homonym. As *althea,* Cramer figured a female and later (1777) figured the male of the same species as *Papilio amphicede,* the name under which it has long been known. I found both these species in Liberia and they are discussed in context.

The Occidental African subspecies of *C. herminia* has not been hitherto recognized.

Male. — (Figs. 129, 130.) Colors on the uppersides, both yellows and browns, slightly lighter and paler than in the nominate subspecies; the dark brown postmedial band half as wide as in typical *herminia* and represented only by a series of separated crescents above Cu_1 on the forewing, these crescents becoming successively more indistinct toward the coastal margin, but present as far as the radial veins; ground color in the marginal band of both wings, orange in *h. herminia,* is in *gongoa* a whitish yellow only a little richer in value than the discal ground color. On the underside the spots in the basal halves of both wings — a dark grey-brown in the nominate subspecies — are orange lightly tinged with brown; the brown postmedial band, though repeated from the upperside, is pale and indistinct so that the narrow, rather straight fine brown line preceding it stands out clearly; in *h. herminia* this line is submerged in the dark, strong brown band.

Female. — (Figs. 131, 132.) As in the male, the upperside is generally paler than in the nominate subspecies, so that the sinuate brown lines in the forewing cell stand out strongly against the warm light brown ground color of the basal half of both wings; above M_3 of the forewing, the distal side of the white band is indistinct, with white and grey-brown scales forming a large patch between it and the series of dark brown submarginal triangles; on both wings the ground color between the white postmedian band and the black submarginal triangles is grey brown, distinctly lighter than the ground color of the basal half of the wings. Similar differences are present on the underside.

Holotype ♂. — Wanau Forest, Liberia, 15-X-1958, R. M. Fox.

Allotype ♀. — Wanau Forest, Liberia, 28-V-1958, R. M. Fox.

In the language of the Mano tribe, who inhabit the region of Wanau Forest, *gongoa* means "a small white eagle".

Cymothoe althea (Cramer)

Papilio althea Cramer, 1776 [1775-1791], 1: 141; pl. 89, figs. E and F (♀, Guinea Coast).

=*Papilio amphicede* Cramer, 1777 [1775-1791], 2: 80; pl. 146, figs. D and E (♂, Guinea Coast).

A series of 22 males and 13 females I took in Liberia respectively agree with Cramer's two figures cited above. Since 15 of the males and 12 of the females all were taken within a limited forest stand (Farwein "devil bush", near Harbel), and since the underside patterns match so well, it seems certain that the sexes are correctly associated. I have not seen specimens from elsewhere than Liberia, nor have I found any reference to it from any other area. It appears at present to be endemic to Liberia, but probably is distributed also in adjoining forests in Sierra Leone, Guinea and Ivory Coast.

Since Buttikofer (1890) and Sharpe (1906) recorded both *althea* (Drury) and *jodutta* (Westwood), is seems likely that they had this species under one or the other name.

Liberia: Harbel, 1 ♂, II, 1 ♂, III, 1 ♂, IV, 4 ♂, 1 ♀, V, 7 ♂, 11 ♀, VI, 1 ♂, VII; Fish Lake, 1 ♂, XII; Gbanga, 1 ♀, VII; Ganta, 1 ♂, V, 2 ♂, VI; Wanau Forest, 1 ♂, X; Zorzor, 1 ♂, XI; Yendamalahoun, 1 ♂, IV (Fox); Grand Cess, 1 ♂ (Naysmith); Buttikofer (1890), Sharpe (1906) as either *althea* (Drury) or *jodutta* (Westwood).

Cymothoe caenia (Drury)

Papilio caenis Drury, 1773 [1770-1782], 2: 33-34; pl. 19, figs. 1 and 2 (♂, Calabar).

The species is distributed from Sierra Leone east to Uganda. The large series I took in Liberia, a first record, is quite uniform: all males are creamy white with submarginal and marginal black-brown markings, all females are black-brown with a white band crossing both wings and some white submarginal spots. Elsewhere in Africa both sexes are variable, the males sometimes being orange and females varying from male-like creamy white with few markings, through orange and red-brown to almost entirely black-brown; many of these variants have been named.

Liberia: Harbel, 3 ♂, I, 2 ♀, II, 2 ♀, III, 4 ♂, 1 ♀, V, 1 ♂, 1 ♀, VII, 3 ♂, X, 2 ♂, 2 ♀, XI, 2 ♂, XII; Ganta, 1 ♂, I, 2 ♂, 2 ♀, II, 7 ♂, 7 ♀, III, 1 ♀, IV, 7 ♂, 13 ♀, VI; Wanau Forest, 9 ♂, 6 ♀, II, 11 ♂, 12 ♀, III, 1 ♂, 1 ♀, V, 1 ♂, VI, 1 ♀, X; St. Paul River at Zorzor Road, 1 ♀, V (all Fox); Grand Cess, 1 ♂, 1 ♀ (Naysmith); Bonata, 1 ♂ (Leland, A.M.N.H.); no data, 1 ♀ (Cooper, A.M.N.H.).

Cymothoe jodutta (Westwood)

Harma jodutta Westwood, 1850 [1846-1852]: 289 (Ashanti).

This common species is distributed throughout the Guinean subregion with three well marked subspecies (Overlaet, 1952), of which the nominate is found from Sierra Leone to the Niger.

Liberia: Harbel, 1 ♂, I, 1 ♀, V; Fish Lake, 3 ♂, 1 ♀, I; Ganta, 1 ♂, I, 1 ♂, III, 1 ♂, 5 ♀, V, 3 ♂, 1 ♀, VII, 1 ♂, VIII, 1 ♂, X, 1 ♂, XII; Wanau Forest, 1 ♂, 1 ♀, I, 2 ♂, 1 ♀, II, 13 ♂, 3 ♀, III, 2 ♀, IV, 2 ♂, 1 ♀, V, 1 ♀, VI, 3 ♂, X; St. Paul River at Zorzor Road, 1 ♂, III; Bomi Hills, 2 ♂, 1 ♀, IV (Fox); Cape Palmas, 1 ♂ (Naysmith); no data, 1 ♂ (Good); Penoke, Diyala, 8 ♂, V (Condamin, 1951); Buttikofer (1890) as *ehmckei*; Sharpe (1906).

Cymothoe sangaris sangaris (Godart)

Nymphalis sangaris Godart, 1820 [1819-1823]: 337, [1821] 384 (West Coast of Africa). Lucas, 1835 [1835-1864]: 129; pl. 69, fig. 2.

The systematics of the red species of *Cymothoe* remains in utter confusion. Aurivillius (1908-1925) listed nine species and some aberrations but made no attempt to associate the biological species. Overlaet (1952) listed fourteen species arranged into three "sections", each section probably being a true species, and he misapplied some of the names.

In any event, there are only two species in Liberia. The males of *sangaris* are brilliant red above, with jet black lines at the edges of both wings and a row of black dots near the margin of the hindwing. Females are largely white above, with the bases of the wings a light brown and light brown markings near the outer margins. The males agree exactly with Lucas' figure of Godart's type, particularly with respect to details of the outlines of the wings. It seems likely that the type locality was in fact in Sierra Leone or Liberia.

It should be noted that *Harma sangaris* Hewitson is not the Godart species and that *Harma uselda* Hewitson is a color variant of *Harma antigoris* Hewitson, not a form of *sangaris* as Overlaet (1952) thought.

Liberia: Ganta, 1 ♂, II, 1 ♀, III (Harley, A.M.N.H.), 2 ♂, V; Wanau Forest, 1 ♂, I, 1 ♂, 2 ♀, II, 6 ♂, 1 ♀, III, 1 ♀, V, 1 ♂, VI, 1 ♂, X; St. Paul River at Zorzor Road, 1 ♂, IV; Bomi Hills, 1 ♀, IV (Fox); Diyala, 1 ♀, V (Condamin, 1951, as *antigoris* ?).

Cymothoe coccinata coccinata (Hewitson)

Harma coccinata Hewitson, 1874 [1852-1876], 5: [41]-[42]; pl. [22], figs. 24, 25 (not fig. 26) (♂, Old Calabar).

The males are like the preceding species but the ground color is orange-red and there is a black-bordered white spot at the costa of the hindwing. Females have the forewing grey brown with white and black-brown markings; a broad yellow-white band on the hindwing and the black-bordered white spot is present. The nominate subspecies is found in Occidental Africa.

Males of both these red species habitually rest on a leaf about thirty or forty feet above the ground, overlooking a trail; from such a vantage point they like to "dive bomb" passing butterflies and chase them away. I caught many of them by waving my net below a resting male and persuading him to attack. Females fly slowly among low vegetation seeking suitable sites for oviposition.

Liberia: Ganta, 2 ♂, V; Wanau Forest, 3 ♂, II, 5 ♂, 5 ♀, III, 1 ♂, VI, 1 ♀, X; St. Paul River at Zorzor Road, 2 ♂, 1 ♀, III, 2 ♂, V (Fox).

Genus **EUPTERA** Staudinger

Euptera Staudinger, 1891: 98. Type-species: *Euptera sirene* Staudinger, designated by Hemming, 1943.

The members of this genus, which stands in need of revision, all are very rare in collections. There appear to be five valid species, of which three occur or probably occur in Liberia. Based on material in Carnegie Museum, supplemented by descriptions, figures and discussions in literature, the following key distinguishes the species.

1. Wings broadly orange-tawny from the base; margins and apex of forewing black with white spots ..... *E. crowleyi*
   Wings not broadly orange-tawny, dark at the base; hindwing with one or two light bands crossing it 2
2. Hindwing with two bands: one close to the base, continued by the band of the forewing, and a broader discal band 3
   Hindwing with only the discal band, the basal band absent 4
3. Forewing apex not strongly produced, the outer margin only lightly curved; hindwing with a short projection at anal angle, the outer margin nearly straight; females nearly like the males in coloring and the marginal spots of hindwing not engulfed by the light band. ..... *E. elabontas*

Forewing apex strongly produced, the outer margin deeply excavated; hindwing with a strong projection at the anal angle, the outer margin rounded; females unlike males, with hindwing discal band often so wide as to engulf the marginal spots ..... *E. sirene*

4. Light band of hindwing in males continued to costal margin by elements above R_s; underside with the light band strongly repeated across both wings; band in females discontinuous on forewing ..... *E. pluto*

Light band of hindwing in males terminated at R_s, no light element present between R_s and costal margin; band not repeated beneath, or only sketchily, the undersides largely dark; band in females wide and continuous on forewing ..... *E. hirundo*

Euptera pluto zowa new subspecies (Figs. 133-134)

Two males taken in the residual forest at Farwein, near Harbel, have the features of *E. pluto* as set forth in the above key, and combine some of the characters of *E. p. kinugnana* (Grose-Smith) (figs. 137, 138) of East Africa and of *E. p. trigona* (Holland) (figs. 135, 136) of Gabon. Apparently *E. p. zowa* is the Occidental subspecies of *pluto*.

Male. — (Figs. 133, 134.) Ground color above is a blackish brown only very slightly paler than in *kinugnana* and *trigona*. The three yellow postdiscal spots present in *kinugnana* between R and M_3 are strongly reduced, as in *trigona*, and represented only by streaks of pale yellow scaling. The zigzag white submarginal line is present but faint and near the anal angle it is nearly obsolete. The light postdiscal band is pale straw yellow, not golden yellow as in *kinugnana* and *trigona*; the anteriormost element is a spot in M_3-Cu_1, isolated as in *trigona* but a little larger, not confluent with the rest of the band as in *kinugnana*; the three elements below Cu_1 are confluent, the uppermost being the widest and in this respect *zowa* resembles *kinugnana* rather than *trigona*, in which these three confluent elements form a triangular band with the posteriormost element the widest. On the hindwing above, the postdiscal light band is continuous from the costal margin down to Cu_2-A, its proximal edge an even curve but its distal edge a series of scallops, the light color forming convex arcs between the veins; the element in Cu_2-A is very little longer than the element in Cu_1-Cu_2, the band being the same width as or a little narrower than the same band in *kinugnana*; it should be noted that this band in *trigona* is strongly widened at its posterior end and as a whole forms a triangle.

On the underside the ground color is ochre-brown, much paler than in *trigona* and approximately the value of the ground color in *kinugnana*. The markings of the upperside are repeated beneath, but all light markings are here white, none yellow; the submarginal series of dots on both wings and the spots in the forewing discal cell are black.

Holotype ♂. — Harbel, Liberia, 4-II-1955, R. M. Fox.
Paratype ♂. — Harbel, Liberia, 15-VII-1955, R. M. Fox.

Figs. 133-138. Fig. 133, underside, fig. 134, upperside, *Euptera pluto zowa* new subspecies, holotype male, Harbel, Liberia. Fig. 135, underside, fig. 136, upperside, *Euptera pluto trigona* Holland, holotype male, Gabon. Fig. 137, underside, fig. 138, upperside, *Euptera pluto kinugnana* (Grose-Smith), male, Amani, Tanganyika. All natural size.

[**Euptera elabontas dorothea** Bethune-Baker]

Euptera dorothea Bethune-Baker, 1904: 233 (♂ and ♀, Sierra Leone).

This species has been recorded from Sierra Leone to Uganda. It probably also occurs in Liberia.

[**Euptera sirene sirene** Staudinger]

Euptera sirene Staudinger, 1891: 98-101; pl. 1, fig. 6 (♂, Gold Coast).

The species, in at least five subspecies, has been found from Gold Coast to Uganda. The nominate subspecies, though not yet recorded from Liberia, undoubtedly occurs there.

Genus **PSEUDATHYMA** Staudinger

Pseudathyma Staudinger, 1891: 90. Type-species: *Pseudacraea sybillina* Staudinger, 1890, by monotypy.

The genus includes only two or three species, one of which occurs in Liberia. It is structurally near the preceding genus, but differs with respect to venation and male genitalia.

Pseudathyma sybillina sybillina (Staudinger)

Pseudacraea sybillina Staudinger, 1890: pl. 3, fig. 8. 1891: 92 (Sierra Leone).

Black with white spots and looking much like *Neptis* (below), the nominate subspecies is exclusively Occidental and has not been recorded from Liberia previously.

Liberia: Wanau Forest, 1 ♀, II (Fox).

Genus **EURIPHENE** Boisduval

Euriphene Boisduval, 1847: 592. Type-species: *Euriphene coerulea* Boisduval, 1847, by monotypy.

=*Euryphene*: Feisthamel, 1850 [before 10 July]: 251-253, an emended spelling of *Euriphene* Boisduval and attributed to him. Westwood, 1850 [2 September] [1846-1852]: 285.

=*Diestogyna* Karsch, 1893: 181-182. Type-species: *Papilio veronica* Cramer, by monotypy.

=*Euryphura* Staudinger, 1891: 103. Type-species: *Euryphene porphyrion* Ward, designated by Hemming, 1943.

As is now well known, there has been an unfortunate mix-up in the name of this genus, generally known by the Karsch name, *Diestogyna,* which Aurivillius (1898, 1908-1925) used. The only species included by Boisduval in his *Euriphene* was, however, a member of this genus and the name must be used as the prior one available. Confusion was compounded when Feisthamel and Westwood, independently and almost simultaneously, elected to emend the Boisduval name by changing the 'i' to 'y', under the faulty impression that Boisduval's transliteration from the Greek was incorrect. To make matters worse, Westwood included under Euryphene a series of species which were not congeneric with *coerulea,* and there the situation remained for many years. Whether Hemming (1943) was correct in regarding *Euryphene* as an unjustified emendation of *Euriphene,* or whether *Euryphene* is to be regarded as a new generic name proposed by Feisthamel to replace *Euriphene* does not alter the situation, for in the latter case it would have to take as its type species that of the genus it replaced.

As the consequence of the errors of Feisthamel, Westwood and Aurivillius, it is necessary now to use *Euriphene* in place of *Diestogyna* and *Euryphene* can no longer be used in its accustomed way.

In both his major works on African butterflies, Aurivillius (1898, 1908-1925) gave *Euryphura* the status of a separate genus, but it is

structurally identical with *Euriphene* except for the shape of the wings. In *Euryphura* the hindwing projects furtherest at the end of Cu_2 while in *Euriphene* the projection is at the end of 1A. *Euryphura* is here treated as a subgenus, but even this action probably attributes undue importance to the very minor difference involved.

Twelve species of *Euriphene* occur in Liberia and a thirteenth is likely on distributional grounds. Two species were first recorded by Buttikofer (1890), five by Condamin (1951) and five herein, including a new subspecies. This last, the Occidental subspecies of a species previously known only from the Equatorial region, suggests that there still may be other undiscovered Occidental subspecies.

[**Euriphene (Euryphura) nobilis** Staudinger]

Euriphene (*Euryphura*) *nobilis* Staudinger, 1891: 107-110; pl. 1, fig. 3 (Sierra Leone).

This handsome blue species, described from Sierra Leone, has not yet been found in Liberia.

Euriphene (Euryphura) plautilla (Hewitson)

Euryphene plautilla Hewitson, 1864 [1852-1876], 3: [47]-[48]; pl. [24], figs. 14 and 15 (Old Calabar).

Distributed from Sierra Leone to Uganda, this species is exceedingly variable in both sexes. Among the specimens listed below there are three color variations of males and no two females are alike. The many names given to all these variants are, of course, pure synonyms. The species seems not to form subspecies.

Liberia: Ganta, 1 ♂, III, 5 ♂, 9 ♀, V, 1 ♂, VII; Wanau Forest, 4 ♂, 1 ♀, II, 4 ♂, 3 ♀, III (Fox); Diyala, 1 specimen, V (Condamin, 1951, as ab. "lisidora").

Euriphene (Euriphene) simplex (Staudinger)

Aterica simplex Staudinger, 1891: 97-98 (Sierra Leone).

This exclusively Occidental species has not been previously recorded from Liberia, although I found it common everywhere.

Liberia: Harbel, 3 ♂, I, 1 ♂, 2 ♀, II, 1 ♀, V, 1 ♂, X, 3 ♂, XII; Fish Lake, 1 ♂, 1 ♀, I, 1 ♂, XII; Gbanga, 1 ♂, VII; Kpain, 1 ♂, 1 ♀, V, 1 ♀, X; Ganta, 1 ♂, I, 1 ♂, II, 11 ♂, 3 ♀, V, 4 ♂, 1 ♀,

VI, 5 ♂, 2 ♀, VII, 2 ♂, IX, 1 ♂, X, 1 ♂, XII; Wanau Forest, 4 ♂, 1 ♀, I, 5 ♂, II, 6 ♂, 1 ♀, III, 2 ♂, V, 2 ♂, 1 ♀, X; St. Paul River at Zorzor Road, 2 ♂, II, 6 ♂, III, 2 ♂, IV, 3 ♂, V; Zorzor, 2 ♂, XI; Wozi, 1 ♂, XI; Yendamalahoun, 4 ♂, IV (Fox); Gokai, 2 ♂, II (Leland, A.M.N.H.).

Euriphene (Euriphene) feronia (Staudinger)

Aterica feronia Staudinger, 1891: 96-97 (Sierra Leone).

I found this Occidental species in the more open parts of primitive forest.

Liberia: Harbel, 1 ♂, 1 ♀, XI; Ganta, 1 ♂, II, 2 ♀, V, 1 ♂, 1 ♀, VI, 2 ♂, VII (Fox), 1 ♀, X (Leland, A.M.N.H.), 1 ♂, XII; Wanau Forest, 1 ♀, IV, 1 ♂, VIII (Fox); Diyala, 1 ♂, V (Condamin, 1951).

Euriphene (Euriphene) veronica veronica (Stoll)

Papilio veronica Stoll, 1780 [1775-1791], 4: 73; pl. 325, figs. C and D (Coast of Guinea).

The nominate subspecies is endemic to the Occidental area and another subspecies inhabits the Equatorial forests. *E. veronica* is exceedingly common throughout Liberia.

Liberia: Harbel, 6 ♂, I, 1 ♂, II, 1 ♂, 1 ♀, V, 3 ♂, X, 2 ♂, XI, 4 ♂, XII; Fish Lake, 3 ♂, I, 1 ♂, XII; Ganta, 1 ♂, I, 3 ♂, II, 2 ♂, III, 9 ♂, V, 4 ♂, 1 ♀, VI, 9 ♂, VII, 3 ♂, VIII, 1 ♂, XII; Wanau Forest, 2 ♂, I, 6 ♂, III, 1 ♂, V, 3 ♂, X; St. Paul River at Zorzor Road, 3 ♂, IV; Zorzor, 1 ♂, XI; trail from Voinjama to Yendamalahoun, 1 ♂, IV; Yendamalahoun, 2 ♀, IV (Fox); Cape Palmas, 1 ♂ (Naysmith); no data, 1 ♂ (Good); eastern Liberia, 14 ♂, III, IV, V (Condamin, 1951); Buttikofer (1890).

Euriphene (Euriphene) felicia (Butler)

Aterica felicia Butler, 1871: 80-81 (♀, Gold Coast). 1871 [1869-1874]: 73; pl. 28, fig. 3.

Males of this Occidental species are apparently rare and for many years were unknown. Butler, who had only a female, correctly predicted that the male would be found to be one of the blue species. The two males I captured are quite similar to the male of *E. v. veronica*, but the upperside has brighter blue reflections and more sharply

defined markings, while the underside is a rich reddish brown entirely devoid of blue-gray tones at the anal angle of the hindwing, the white postdiscal dots are strong and the discal band has a different configuration. For Liberia the records below are the first.

Liberia: Harbel, 1 ♂, XI; Fish Lake, 1 ♀, I; Kpain, 1 ♀, V; Ganta, 2 ♀, V, 1 ♂, 1 ♀, VI; St. Paul River at Zorzor Road, 1 ♀, IV (Fox).

Euriphene (Euriphene) milnei (Hewitson)

Euryphene milnei Hewitson, 1864 [1852-1876], 3: [47]; pl. [24], figs. 12 and 13 (Old Calabar).

This very distinctive species is represented in Carnegie Museum from Cameroons. Statements that it reaches Liberia to the west all are based on the identification by Buttikofer (1890). It is difficult to imagine that Buttikofer erred in recognizing *milnei,* but it has not since been found.

Euriphene (Euriphene) amicia gola new subspecies (Figs. 139, 140)

Two males taken in the Gola Forest at Bomi Hills are *E. amicia* Hewitson and apparently represent the Occidental subspecies of this uncommon species. The nominate subspecies, described from eastern Nigeria, is found also in Cameroons (figs. 141, 142).

Male. — (Figs. 139, 140.) The pattern on both sides of the wings is nearly identical with that of *E. a. amicia,* but differs in the following respects: the ground color is much duller and is suffused with black-brown, giving the impression on the upperside of dark wings with light marks, rather than of a reddish brown wing with dark marks; the row of submarginal spots, the postdiscal dark band, the discocellular and discal spots all are brownish black and somewhat wider than in *amicia,* and the bases of both wings are suffused with blackish brown. On the underside, the ground color is dark ochre-brown, darker than in *amicia,* which is variegated orange and yellow brown with grey-violet tones along the costa of the forewing and the anal angle of the hindwing (though these grey-violet areas are not present in all males of *amicia*); the lines and dots of the basic pattern are indistinct in *gola,* much more so than in *amicia,* and only the two black spots of the hindwing (one in the discal cell, one over the discocellulars) stand out.

Holotype ♂ and paratype ♂. — Bomi Hills, Liberia, 4-IV-1955, R. M. Fox.

Euriphene (Euriphene) doriclea doriclea (Drury)

Papilio doriclea Drury, 1782 [1770-1782], 3: 50; pl. 30, figs. 5 and 6 (Sierra Leone).

Figs. 139-142. Fig. 139, upperside, fig. 140, underside, *Euriphene amicia gola* new subspecies, holotype male, Bomi Hills, Liberia. Fig. 141, upperside, fig. 142, underside, *Euriphene amicia amicia* Hewitson, male, Ekut, Cameroons. All natural size.

The nominate subspecies is Occidental, with other subspecies in the Equatorial area. It is here recorded from Liberia for the first time.

Liberia: Ganta, 1 ♀, V, 1 ♂, 1 ♀, VII, 1 ♀, IX, 1 ♂, X (Fox).

Euriphene (Euriphene) gambiae (Feisthamel)

Euryphene gambiae Feisthamel, 1850: 251; pl. 9, fig. 2 (Senegal).

This species occurs from the Gambia River to the Congo Basin wherever there are forests. I found it frequenting the more open wooded areas, especially in secondary growth, but only in the interior.

Liberia: Kpain, 1 ♂, 1 ♀, X; Ganta, 3 ♂, 2 ♀, II, 2 ♀, III, 1 ♂, 6 ♀, V, 3 ♂, 2 ♀, VI, 6 ♂, VII, 1 ♂, VIII, 1 ♂, X, 1 ♂, XII; Wanau Forest, 2 ♂, 1 ♀, III, 1 ♂, X; Bomi Hills, 1 ♂, IV (Fox); eastern Liberia, 2 ♂, 3 ♀, III, IV, V (Condamin 1951).

Euriphene (Euriphene) ampedusa (Hewitson)

Aterica ampedusa Hewitson, 1865 [1852-1876], 3: [49]; pl. [25], figs. 3, 4, and 5 (Old Calabar).

This species is known only from Sierra Leone to western Nigeria.

Liberia: Ganta, 1 ♂, II, 1 ♀, V, 1 ♂, VII, 1 ♂, IX; Wanau Forest, 1 ♀, X, 1 ♂, XI; Zorzor, 1 ♂, XI; Yendamalahoun, 1 ♀, IV (Fox); Diyala, 1 ♂, V (Condamin, 1951).

Euriphene (Euriphene) leonis (Aurivillius)

Diestogyna ampedusa var. *leonis* Aurivillius, 1898: 202 (Sierra Leone).

Aurivillius thought this species to be a "variation" of the preceding one; it is quite distinct, although superficially similar. In Liberia, from whence it has not previously been recorded, I never found it in localities where I found *ampedusa;* which seems to be a hinterland species. Apparently *leonis* replaces *ampedusa* along the coast, but the many differences in pattern structure suggest that it is a true replacement species rather than a subspecies.

Liberia: Fish Lake, 1 ♂, XII; Bomi Hills, 1 ♂, IV (Fox); Monrovia 1 ♀; no data, 1 ♀ (Good).

Euriphene (Euriphene) atossa (Hewitson)

Aterica atossa Hewitson, 1864 [1852-1876], 3: [48]; pl. [24], figs. 1 and 2 (♀, Old Calabar).

=*Aterica amaxia* Hewitson, 1866 [1852-1876], 3: [51]; pl. [26], figs. 8 and 9 (♂, Old Calabar).

Males and females are sufficiently different that Hewitson described them as different species. *E. atossa* is distributed in forests throughout the Guinean Subregion.

Liberia: Wanau Forest, 1 ♀, II, 1 ♀, VI (Fox); Ziabli, 1 ♀, V (Condamin, 1951, as ♀ aberration "australis").

Genus **NAJAS** Hübner

Najas Hübner, [1807] [1806-1838], 1: pl. [60]. Type-species, *Najas themis* Hübner, by monotypy.

=*Euphaedra* Hübner, [1819] [1816-1826]: 39. Type-species: *Papilio cyparissa* Cramer, designated by Scudder, 1875.

=*Romaleosoma* Blanchard, 1840: 448. Type-species: *Papilio eleus* Drury, by original designation.

=*Euryphene*: of authors, not *Euriphene* Boisduval, 1847. Westwood, 1850 [1846-1852]: 285. Aurivillius, 1898: 191-202. 1908-1925: 170-181.

=*Bebearia* Hemming, 1960: 12. Type-species: *Euryphene iturina* Karsch, by original designation.

Two traditionally recognized genera are involved here: the series of species called *Euryphene* by Aurivillius (1898 and 1908-1925) and the series designated as *Euphaedra.* The type species of *Euphaedra, Romaleosoma* and *Najas* all are congeneric and *Najas* is the senior name. As was observed above, Hemming (1960) showed that *Euryphene* was an unjustified emendation of *Euriphene* Boisduval and therefore is the same name with the same type species, but that *Euriphene* Boisduval must be used for the butterflies formerly subsumed as *Diestogyna* Karsch, a junior synonym. To provide a name for *Euryphene,* as used by authors in recent years, Hemming proposed *Bebearia* — the only available name for these insects if they are placed in a separate genus.

There is, however, a biological question involved, quite aside from nomenclature: are the butterflies now placed in *Bebearia* generically distinct from *Najas* (=*Euphaedra*) ? .

While it may be a convenience to divide the numerous species of this complex into two series and call them two genera, and while it may also be a convenience to use the color of the palpi for such a division, the fact remains that the color of the palpi is the *only* structural distinction between them. Biologically, these two series are but one genus. Were this the end of the biological problem, it might be possible to recognize two subgenera within *Najas,* maintaining the two series of species much as traditionally presented. But study of male genitalia demonstrates that the color of the palpi is not only too slight a basis for recognizing two genera in this case, but that a division along these lines is artificial: certain species with orange palpi evidently are more closely related to certain species with grey palpi than they are to other species with orange palpi. For the present it must suffice to place the two series into a single genus, *Najas,* and it is hoped that in the future there will be opportunity to make available the details of my findings on a Pan-African basis.

The species groups used by Aurivillius (1908-1925: 170, 182) also are artificial and, in some situations, fail to provide for the extreme variability of certain species. Conspecific populations may fall into different groups by this system and, conversely, certain perfectly sound species were presented as aberrations or as subspecies.

Thirty-two species are now known from Liberia, of which Buttikofer (1890) recorded 10, Sharpe (1906) two, Condamin (1951)

another 15 and my collecting revealed five more. To this list is added two species which might occur in Liberia, although the presence of one of them is considered doubtful.

Najas carshena (Hewitson)

Euryphene carshena Hewitson, 1870 [1852-1876], 4: [54]; pl. [30], figs. 31 and 32 (Old Calabar).

The species occurs from Liberia to Uganda without, apparently, forming subspecies.

Liberia: Ganta, 1 ♂, V (Fox); Diakake, 1 ♂, III (Condamin, 1951).

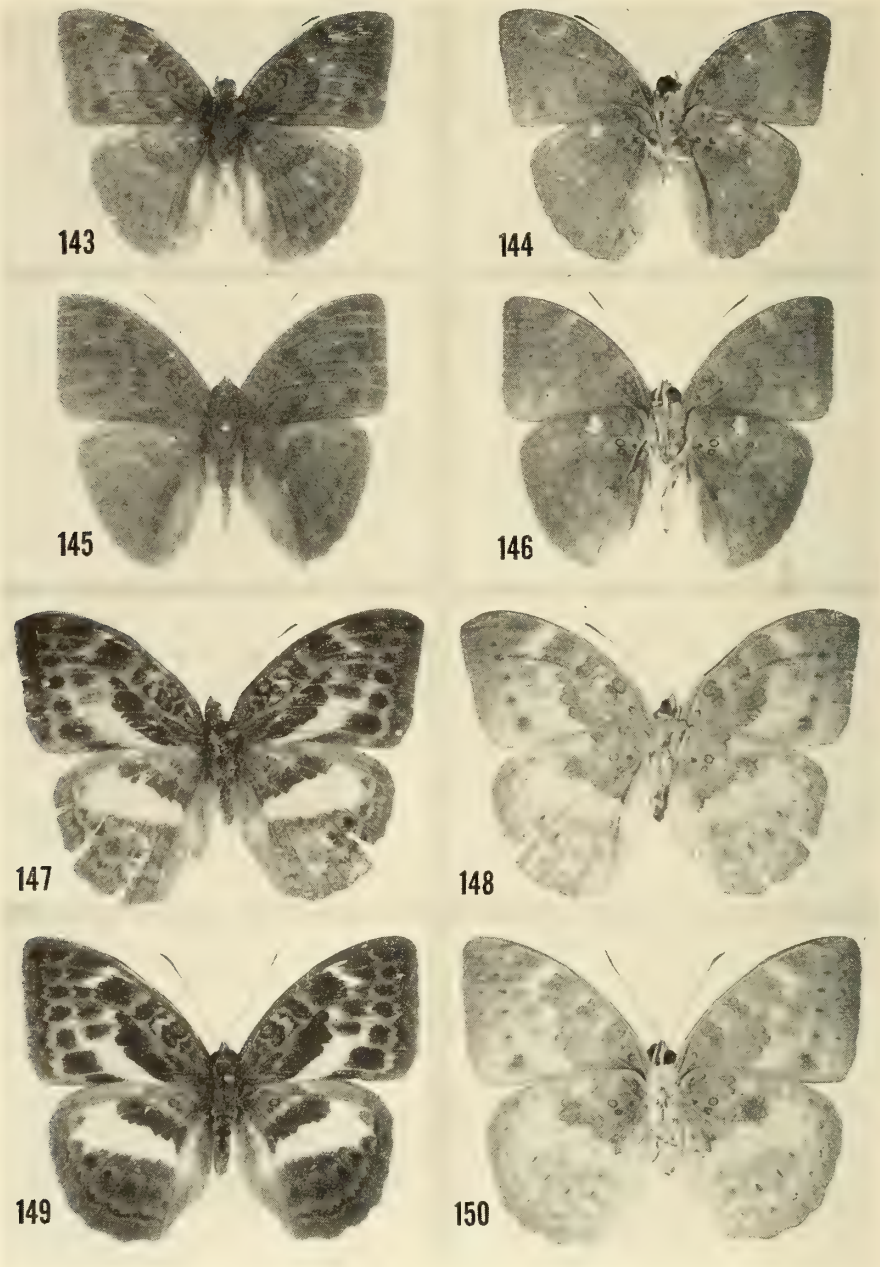
Najas tentyris winifredae new subspecies (Figs. 143, 144, 147, 148)

The species is distributed from Sierra Leone to Angola and Uganda. The nominate subspecies (figs. 145, 146, 149, 150) (Hewitson, 1865 [1852-1876], 4: [50]; pl. [25], figs. 21 and 22) was described from Old Calabar; apparently the exact locality was in eastern Nigeria, the extreme eastern extension of the Equatorial forest area, as the Hewitson figure (a male) agrees exactly with many specimens in Carnegie Museum from coastal Cameroons.

The series of this species I took in Liberia differs both from Cameroons specimens and from Hewitson's excellent illustration and represents the Occidental subspecies. It probably will be found to occur from Sierra Leone to western Nigeria.

Male. — (Figs. 143, 144.) Both wings above with clear blue reflections, the hindwings without the coppery-violet reflection typical of most Cameroons specimens, though some Liberian individuals have a narrow band of blue-violet reflection along the outer margin. The series of black postmedial round spots on both wings is strong, but the medial series — strong and often fused in a band in *t. tentyris* — is weak and faint on the hindwing of *t. winifredae* and below M_3 on the forewing and is never fused into a band. On the undersides the ground color of both subspecies exhibits about the same range of variation, but the markings of *t. tentyris* are stronger, while those of *t. winifredae* are weak and usually quite faint. Since both subspecies are found in forested regions of high rainfall, the weaker markings of *t. winifredae* cannot be attributed to seasonal variation.

Female. — (Figs. 147, 148.) On the upperside of the forewing the yellow color of the nominate subspecies is suppressed and replaced by grey-brown in the discal cell, in the apex and near the outer margin, so that yellow occurs only below M_3 in the hind marginal band. On the hindwing the yellow is confined to the medial band and does not occur between or beyond the dark spots of the postmedial series. On the underside the pattern is fainter than in *t. tentyris*.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Holotype ♂. — Wanau Forest, Liberia, 6-III-1958, R. M. Fox.

Allotype ♀. — Yendamalahoun, Liberia, 28-IV-1958, R. M. Fox.

Paratypes, 9 ♂, 5 ♀. — Harbel, 1 ♀, 5-V-1956, 1 ♂, 1 ♀, 9-V-1956, 1 ♀, 3-VI-1955, 1 ♀, 20-XI-1956; Bomi Hills, 1 ♂, 4-IV-1955; Ganta, 1 ♀, 15-V-1958, 1 ♂, 17-V-1958, 2 ♂, 19-V-1958, 1 ♂, 13-VII-1958, 1 ♂, 5-IX-1958; Wanau Forest, 1 ♂, 6-III-1958; trail from Voinjama to Yendamalahoun, 1 ♂, 24-IV-1958; all R. M. Fox.

This subspecies, named for Mrs. George W. Harley of Ganta Mission, stands out from Cameroons material because of the striking difference in the reflections, especially of the hindwing. Two kinds of males are found in Cameroons, Gabon and Congo material: about two-thirds have blue reflections on the forewing and coppery-violet on the hindwing and at the posterior margin of the forewing, while about one-third have faint red-violet reflections on both wings.

Najas abesa (Hewitson)

Euryphene abesa Hewitson, 1869: 74 (Cape Coast Castle). [1852-1876], 4: [53]; pl. [30], figs. 29 and 30.

The recorded distribution appears to be from Liberia to the Congo, but this species probably occurs throughout the forests of the Guinean Subregion. This is the first Liberian record.

Liberia: Ganta, 1 ♂, V; Wanau Forest, 2 ♂, II, 4 ♂, III, 2 ♂, X (Fox).

Najas absolon absolon (Fabricius)

Papilio absolon Fabricius, 1793 [1792-1799], 3: 56 (Western Africa).

The nominate subspecies occurs in the Guinean Subregion, with another subspecies in Uganda. The series recorded below does not seem to differ from the good representation in Carnegie Museum from Cameroons, Gabon and the Congo.

Liberia: Ganta, 1 ♂, VI, 1 ♂, VII; Wanau Forest, 1 ♂, II, 1 ♂, X; Yendamalahoun, 3 ♀, IV (Fox); Diyala, 1 ♂, V (Condamin, 1951).

Figs. 143-150. Fig. 143, upperside, fig. 144, underside, *Najas tentyris winifredae* new subspecies, holotype male, Wanau Forest, Liberia. Fig. 145, upperside, fig. 146, underside, *Najas tentyris tentyris* (Hewitson), male, Metet, Cameroons. Fig. 147, upperside, fig. 148, underside, *Najas tentyris winifredae* new subspecies, allotype female, Yendamalahoun, Liberia. Fig. 149, upperside, fig. 150, underside, *Najas tentyris tentyris* (Hewitson), female, Lolodorf, Cameroons. All natural size.

Najas zonara (Butler)

Euryphene zonara Butler, 1871: 81 (Cape Coast). 1871 [1869-1874]: 72; pl. 28, figs. 1 and 2.

The species is distributed throughout the forests of the Guinean Subregion and does not form geographic subspecies.

Liberia: Wanau Forest, 2 ♂, III; trail from Voinjama to Yendamalahoun, 1 ♂, IV; Yendamalahoun, 1 ♂, IV (Fox); Bonata, 1 ♂, II (Leland, A.M.N.H.); Diyala, 5 ♂, 1 ♀, V (Condamin, 1951).

Najas mandinga (C. and R. Felder), 1860

Euryphene mandinga C. and R. Felder, 1860: 108 (Senegal).

This species is found in forests from Senegal to the Congo Basin, but unlike the preceding species, it appears to be commoner in Occidental Africa.

Liberia: Ganta, 1 ♀, III, 1 ♀, VI, 1 ♂, VII (Fox), 1 ♂, VII (Harley, A.M.N.H.); Wanau Forest, 2 ♂, I, 1 ♂, II, 2 ♂, III, 1 ♂, X; Zorzor, 1 ♂, XI; Yendamalahoun, 2 ♂, IV (Fox); eastern Liberia, 1 ♂, 1 ♀, III, V (Condamin, 1951).

Najas oxione (Hewitson)

Euryphene oxione Hewitson, 1865 [1852-1876], 3: [50] (Old Calabar). 1871 [1852-1876], 4: [55]; pl. [31], figs. 36 and 37.

The species is distributed from Sierra Leone to the Congo.

Liberia: Harbel, 1 ♂, IV; Ganta, 1 ♂, 1 ♀, V (Fox), 1 ♂, VI, 1 ♂, VII (Harley, A.M.N.H.); Wanau Forest, 5 ♂, 1 ♀, I, 4 ♂, II, 2 ♂, III, 2 ♂, V, 8 ♂, X; Zorzor, 1 ♂, XI (Fox); Bigtown, 1 ♂ (Naysmith); Doueke, 1 ♂, III; Diyala, 1 ♂, V (Condamin, 1951).

Najas laetitia (Plötz)

Euryphene laetitia Plötz, 1880: 192 (Mungo, Cameroons).

Distribution of this species is from Sierra Leone to Gabon. Liberian specimens are exactly like those from Cameroons.

Liberia: Ganta, 3 ♂, V, 1 ♀, VI; Wanau Forest, 1 ♂, I, 2 ♂, III, 1 ♂, V; St. Paul River at Zorzor Road, 1 ♂, 1 ♀, III, 1 ♀, IV; Bomi Hills, 1 ♀, IV (Fox); Touzon, 1 ♀, IV (Condamin, 1951).

Najas sophus (Fabricius)

Papilio sophus Fabricius, 1793 [1793-1794], (1): 46 (Western Africa). Doubleday and Hewitson, 1850 [1846-1852]: pl. 43, fig. 4.

This species is found in open forests from Senegal to Angola, throughout the Guinean Subregion.

Liberia: Harbel, 1 ♂, IV, 1 ♀, XI, 3 ♂, XII; Fish Lake, 2 ♂, 2 ♀, I; Ganta, 12 ♂, 9 ♀, V, 6 ♂, 6 ♀, VI, 1 ♂, 1 ♀, VII; Wanau Forest, 1 ♀, II, 1 ♂, 1 ♀, III, 2 ♂, X, 1 ♀, XI; Yendamalahoun, 1 ♂, 1 ♀, IV (Fox); eastern Liberia, 4 ♂, III, IV, V (Condamin, 1951).

Najas demetra (Godart)

Nymphalis demetra Godart, 1821 [1819-1823]: 389 (Western Africa).

Not previously recorded from Liberia, this rare species occurs from Sierra Leone to Cameroons.

Liberia: Ganta, 1 ♀, III, 1 ♂, VI; Wanau Forest, 1 ♀, II, 1 ♀, III, 2 ♂, X (Fox); Monrovia, 1 ♀ (Muller, in Carnegie Museum).

Najas phantasiella phantasina (Staudinger)

Euryphene phantasiella var. *phantasina* Staudinger, 1891: 114-116 (Sierra Leone).

The nominate subspecies is found in the Equatorial forests and *phantasina* is Occidental. When the list of butterflies in Buttikofer (1890) was prepared, *phantasina* had not yet been described and it was identified as the very similar *phantasia* Hewitson, 1865, a species now known to be confined to the Equatorial area.

Liberia: Harbel, 1 ♀, III; Ganta, 1 ♀, II, 3 ♂, 12 ♀, V, 2 ♂, 5 ♀, VI; Wanau Forest, 2 ♂, III, 1 ♀, V (Fox); Diyala, 1 ♂, V (Condamin, 1951) as *phantasia*; Buttikofer (1890), as *phantasia*.

Najas cocalia theognis (Hewitson)

Euryphene theognis Hewitson, 1864 [1852-1876], 3: [41]; pl. [21], figs. 3 and 4 (Ashanti).

This species also has a subspecies in Occidental Africa and one in the Equatorial forests; they were viewed as different species by Aurivillius (1898, 1908-1925).

Liberia: Harbel, 1 ♂, I, 1 ♂, 1 ♀, X, 1 ♀, XII; Kpain, 1 ♂, V; Ganta, 1 ♂, II, 2 ♂, 2 ♀, III, 1 ♂, 3 ♀, V, 2 ♂, 3 ♀, VI, 1 ♂, 1 ♀,

X (Fox), 3 ♀, X (Leland, A.M.N.H.); Wanau Forest, 3 ♂, II, 5 ♂, 3 ♀, III, 1 ♂, 2 ♀, X; St. Paul River at Zorzor Road, 1 ♂, III; Zorzor, 1 ♀, XI; Bomi Hills, 1 ♂, IV; Yendamalahoun, 1 ♂, 1 ♀, IV (Fox); Cape Palmas, 1 ♂, IV; Grand Cess, 1 ♂, V (Naysmith); Bonata, 1 ♂, II (Leland, A.M.N.H.); Diyala, 1 ♂, V (Condamin, 1961); Sharpe (1906) from Reynolds collection.

Najas mardania senegalensis (Herrich-Schäffer)

Euryphene senegalensis Herrich-Schäffer, 1858 [1850-1858]: figs. 95-98 (Senegal).

The species as a whole occurs in more or less open forests from Senegal to East Africa and there are at least three subspecies. The distribution of the Occidental and Equatorial subspecies is unusual in that the boundary between them does not occur in Nigeria but at the narrow savanna corridor in western Ghana. Aurivillius (1898) thought that *mardania* and *senegalensis* were probably the same species but later (1908-1925) treated them as distinct.

Liberia: Harbel, 1 ♀, I, 1 ♂, III, 2 ♂, 1 ♀, V, 1 ♀, VIII, 2 ♂, X, 1 ♀, XI; Bomi Hills, 4 ♂, 4 ♀, IV; Ganta, 1 ♂, II (Fox); Bonata, 1 ♂, II (Leland, A.M.N.H.); eastern Liberia, 4 ♂, 2 ♀, II-V (Condamin, 1951).

Guinea: Wangazi Range, road from Macenta to 'Nzerekore, 1 ♀, IV (Fox).

[**Najas plistonax** (Hewitson)]

Euryphene plistonax Hewitson, 1873 [1852-1876], 5: [43]; pl. [23], figs. 38 and 39 (Angola).

This species is essentially Equatorial but Aurivillius (1898: 198) cited "Lagos" as the western limit of its distribution — on what authority I have not been able to learn. Most species from western Nigeria may occur also in Liberia, but *plistonax* has not yet been found and probably will not be, though it is possible.

Najas arcadius (Fabricius)

Papilio arcadius Fabricius, 1793 [1793-1794], (1): 151 (West Africa).

The species is endemic to the Occidental forests and occurs from Sierra Leone to Ghana.

Liberia: Ganta, 1 ♂, V (Fox); no data, 2 ♀ (Naysmith); Ziabli, 1 ♂, IV (Condamin, 1951).

Najas barce barce (Doubleday)

Aterica barce Doubleday, 1847: 59 (Sierra Leone).
=*Euryphene lesbonax* Hewitson, 1864 [1852-1876], 3: [42]; pl. [21], figs. 5 and 6 (Niger).
=*Euryphene barce* ab. *achillaena* Bartel, 1905: 144 (Togo).

The nominate subspecies is Occidental and another subspecies is found in the Equatorial area. Males are dark velvet green above with a short transverse white bar near the forewing apex; females are violet-blue with dark margins and a weak transverse white bar near the forewing apex. Females of the Equatorial subspecies are greenish rather than blue.

Liberia: Ganta, 1 ♂, VI, 1 ♀, X; Wanau Forest, 1 ♂, II, 1 ♂, 1 ♀, III, 2 ♂, X; Yendamalahoun, 1 ♂, 1 ♀, IV (Fox); Diyala, 1 ♂, V (Condamin, 1951); Buttikofer (1890), as *lesbonax*.

Najas cutteri cutteri (Hewitson)

Euryphene cutteri Hewitson, 1865 [1852-1876], 3: [37]-[38]; pl. [19], figs. 14, 15 and 16 (Old Calabar).

The nominate subspecies is Occidental and the species is distributed from Liberia through the Cameroons.

Liberia: Ganta, 1 ♀, V, 1 ♀, VI, 1 ♀, X; Wanau Forest, 1 ♂, II (Fox); Buttikofer (1890).

[**Najas losinga** (Hewitson)]

Romalaeosoma losinga Hewitson, 1864 [1852-1876], 3: [34]; pl. [17], fig. 5 (Congo).

This species, confined to the Equatorial area, was recorded by Buttikofer (1890) and the record repeated by Sharpe (1906). It is not certain which species was mistaken for *losinga*, but *N. phantasina* is rather similar, as are certain exceptional individuals of *harpalyce*. *N. losinga* does not occur in Liberia.

Najas harpalyce (Cramer)

Papilio harpalyce Cramer, 1777 [1775-1791], 2: 78; pl. 145, figs. D and E (Sierra Leone).

=*Romaleosoma lukuma* Butler, 1870a: 123 (Gold Coast).

Aurivillius (1908-1925: 183) cited the distribution of this species as "Sierra Leone to Cameroons", but it does not appear among the very extensive Cameroons collections in Carnegie Museum, nor is it mentioned by Schultze (1920) in his account of the Cameroons butterflies. *N. harpalyce* probably is endemic to the Occidental area. The width of the subapical transverse yellow band of the forewing is variable, sometimes quite broad, sometimes absent entirely; *lukuma* was described from such a variant individual.

I found *harpalyce* common in open woods and secondary bush everywhere. It alights on the ground and, when disturbed, circles among the vines and small tree trunks. It is one of the few nymphalids regularly seen during the rainy season.

Liberia: Harbel, 1 ♂, 1 ♀, I, 1 ♀, II, 1 ♀, III, 2 ♂, 3 ♀, V, 1 ♂, VII, 1 ♂, VIII, 1 ♂, IX, 2 ♂, 1 ♀, X, 1 ♂, 2 ♀, XI, 1 ♀, XII; Ganta, 3 ♂, 2 ♀, VI, 2 ♂, 1 ♀, VI, 1 ♀, VIII, 1 ♀, IX; 1 ♂, X, 1 ♂, XII; Wanau Forest, 1 ♀, I, 1 ♂, II, 3 ♂, 1 ♀, III, 1 ♂, VII; St. Paul River at Zorzor Road, 1 ♀, III; Zorzor, 4 ♂, XI; Bomi Hills, 5 ♂, 1 ♀, IV; Yendamalahoun, 1 ♂, 1 ♀, IV (Fox); Tuleman, 1 ♂, II (Leland, A.M.N.H.); eastern Liberia, 5 ♂, 4 ♀, III, IV, V (Condamin, 1951); Buttikofer (1890); Sharpe (1906).

Najas eupalus (Fabricius)

Papilio eupalus Fabricius, 1781, 2: 54 (Central Africa).

This species is very similar to the preceding, having the uppersides slate brown with the apex of the forewing white and with a blue band on the hindwing, while the undersides of the wings are green. *N. eupalus* is distinguished on the underside by the row of white spots, never present in *harpalyce*, and by the invariable absence of an orange transverse band on the forewing. It is distributed from Sierra Leone to the Congo and Central Africa.

Liberia: Harbel, 1 ♂, V, 1 ♂, XII; Ganta, 1 ♂, 1 ♀, I, 1 ♂, 1 ♀, II, 1 ♂, 1 ♀, III, 4 ♂, 2 ♀, V, 1 ♂, 1 ♀, VI, 2 ♀, VII, 1 ♀, IX, 1 ♂, X (Fox), 1 ♂, X (Leland, A.M.N.H.); Wanau Forest, 1 ♂, 1 ♀, II, 1 ♂, 1 ♀, III, 1 ♂, VIII, 1 ♂, X; Zorzor, 4 ♂, XI; Bomi Hills, 1 ♀, IV; trail from Voinjama to Yendamalahoun, 1 ♀, IV (Fox); Monrovia, 3 ♂ (Muller, in Carnegie Museum); no data, 1 ♂

(Cooper, A.M.N.H.); Buttikofer (1890); Sharpe (1906) from Whicker Collection.

Najas medon medon (Johansson)

Papilio medon Johansson, 1763: 402.

The nominate subspecies of this variable *Najas* is found from Senegal to Uganda, where another subspecies occurs. Numerous variants have been named.

Liberia: Fish Lake, 1 ♀, I; Ganta, 1 ♂, I, 1 ♀, III, 6 ♂, 2 ♀, V, 1 ♂, VI; Wanau Forest, 2 ♂, III, 2 ♂, VI, 1 ♂, X; Zorzor, 2 ♂, XI (Fox); Touzon, Diyala, 3 ♂, IV, V (Condamin, 1951).

Guinea: Wangazi Range between Macenta and 'Nzerekore, 1 ♀, IV (Fox).

Najas xypete (Hewitson) (Frontispiece, Fig. A)

Romalaeosoma xypete Hewitson, 1865 [1852-1876], 3: [36]; pl. [18], figs. 8, 9 and 10 (no locality cited). Gabriel, 1927: 126.

Although Hewitson recorded no locality for his type specimens, Gabriel (1927) indicates that the male came from Gabon and the two females from Old Calabar. The species is widely distributed, especially in thin forest, glades and along trails, from Sierra Leone throughout the Guinean Subregion. All markings and colors of this insect are exceedingly variable, which has led to the existence of numerous synonymous names. It should be noted that Aurivillius (1908-1925) included at least three different species under *xypete,* and at the same time listed as separate species several of the normal variants.

Liberia: Harbel, 1 ♂, I, 2 ♂, II, 4 ♂, 2 ♀, V, 1 ♂, VI, 1 ♂, IX, 1 ♂, 1 ♀, X, 1 ♂, 1 ♀, XI, 2 ♂, XII; Fish Lake, 1 ♂, 1 ♀, I, 1 ♂, XII; Kpain, 1 ♂, X; Ganta, 2 ♂, II, 1 ♂, III, 7 ♂, 2 ♀, V, 1 ♂, VI, 2 ♂, VII, 1 ♀, VIII, 1 ♂, 1 ♀, X; Wanau Forest, 1 ♂, VII, 4 ♂, X; St. Paul River at Zorzor Road, 1 ♂, III, 2 ♂, IV, 1 ♂, V; Zorzor, 4 ♂, XI; trail near Fisabu, 1 ♂, 1 ♀, XII; Bomi Hills, 6 ♂, IV; Yendamalahoun, 1 ♂, 3 ♀, IV(Fox); Monrovia, 1 ♂ (Good); Bonata, 1 ♂, II (Leland, A.M.N.H.); eastern Liberia, 13 specimens IV, V (Condamin, 1951); Buttikofer (1890).

Najas crockeri (Butler) (Frontispiece, Fig. B)

Romalaeosoma crockeri (Butler), 1869a: 20; pl. 9, fig. 6 (Ashanti).

This is a distinct species, separable both by the structure of the pattern and by the male genitalia, not a "form" of *xypete* as Aurivillius (1898, 1908-1925) placed it. *N. crockeri* is found in the primitive forests of Occidental Africa from Sierra Leone to Nigeria. Sharpe's (1891) record from Bangala, Congo, should be verified, as the species does not occur in the Cameroons. The series below is the first record from Liberia.

Liberia: Ganta, 2 ♂, V (Fox), 1 ♂, VI (Harley, A.M.N.H.); Wanau Forest, 2 ♂, II, 7 ♂, 1 ♀, III, 3 ♂, V, 1 ♂, X (Fox).

Najas gausape (Butler) (Frontispiece, Fig. C)

Romalaeosoma gausape Butler, 1866b: 671-672; fig. 5 (West Africa). Gabriel, 1927: 54 (Type from Ashanti).
=*Euphaedra judith* Weymer, 1892: 88-90 (Sierra Leone).
=*Papilio cyparissa* Cramer (part), 1777 [1775-1791], 2: 93; pl. 156, fig. B (Sierra Leone).

This species prefers open woods and secondary bush and occurs from Senegal to the Congo Basin.

Liberia: Harbel, 3 ♂, 1 ♀, I, 9 ♂, 2 ♀, II, 1 ♂, 1 ♀, III, 1 ♀, IV, 1 ♂, V, 4 ♂, 4 ♀, X, 4 ♂, 5 ♀, XI, 3 ♂, 1 ♀, XII; Ganta, 1 ♀, III, 1 ♂, 1 ♀, VI; Wanau Forest, 2 ♂, X; St. Paul River at Zorzor Road, 1 ♀, V; Bomi Hills, 2 ♂, IV; Yendamalahoun, 1 ♂, 3 ♀, IV (Fox); Bonata, 1 ♂, II (Leland, A.M.N.H.); eastern Liberia, 5 examples IV, V (Condamin, 1951) as *judith*; Buttikofer (1890); Sharpe (1906) from Reynolds Collection.

Najas cyparissa (Cramer) (Frontispiece, Fig. D)

Papilio cyparissa Cramer, 1775 [1775-1791], 1: 63; pl. 39, figs. D and E (Sierra Leone).

N. cyparissa is distributed from Sierra Leone to the Congo.

Liberia: Monrovia, 2 ♀ (Holland Collection); Diyala, 3 specimens, V (Condamin, 1951).

[**Najas sarcoptera** (Butler)] (Frontispiece, Fig. E)

Romalaeosoma sarcoptera Butler, 1871 [1869-1874]: 81; pl. 31, fig. 2 (Gold Coast).

This endemic Occidental species is quite distinct from *cyparissa*, of which Aurivillius (1898, 1908-1925) thought it was a "variation". It has not yet been recorded from Liberia but it certainly should occur there.

Najas themis themis Hübner (Frontispiece, Figs. F, G)

Najas themis Hübner, 1807, 1: pl. 60 (No locality cited).

Although Hübner failed to cite a locality for his *themis*, subsequent authors generally have given "West Africa", in the broad sense of the whole Gulf of Guinea coast. Because specimens from Occidental Africa agree much better with Hübner's illustration — one of the males from Yendamalahoun is almost exactly like it — than do specimens from Cameroons or the Congo, it appears to me most probable that the Hübner specimen came from the Guinea-Liberia-Ivory Coast area. Accordingly, the Occidental subspecies is considered nominate, while another subspecies occurs east of the Niger River in the Equatorial forests.

This species is problematic because there is an extraordinary range of variation in coloring and in details of the pattern in both sexes. Aurivillius (1908-1925) confused two or more species in his presentation of *themis* and treated all junior names as "aberrations", but most of them should be relegated to synonymy.

I found it especially along trails in high forests.

Liberia: Harbel, 1 ♂, V; Gbanga, 1 ♀, VII; Ganta, 2 ♂, 1 ♀, I, 4 ♂, II, 2 ♂, III, 1 ♂, IV, 15 ♂, 6 ♀, V, 2 ♂, 2 ♀, VI, 2 ♂, 1 ♀, VII, 2 ♂, X (Fox), 1 ♀, X (Leland, A.M.N.H.); Wanau Forest, 1 ♂, I, 2 ♀, II, 6 ♂, 2 ♀, III, 2 ♂, V, 1 ♂, VI, 1 ♀, VII, 2 ♂, 1 ♀, X; trail near Fisabu, 1 ♂, 1 ♀, XII; Yendamalahoun, 3 ♂, 4 ♀, IV; trail from Voinjama to Yendamalahoun, 2 ♀, VI; (Fox); Gokai, 1 ♀, III, Tuleman, 1 ♀, III (Leland, A.M.N.H.); eastern Liberia, 9 specimens III, IV, V (Condamin, 1951); Buttikofer (1890); Sharpe (1906) from Reynolds Collection as "campaspe", a variant.

Guinea: Wangazi Range between Macenta and 'Nzerekore, 1 ♂, 2 ♀, IV (Fox).

Najas janetta (Butler) (Frontispiece, Fig. H)

Romalaeosoma janetta Butler, 1871: 80 (Fantee, Cape Coast). 1871 [1869-1874]: 82; pl. 31, fig. 4.
=*Romalaeosoma vestusta* Butler, 1871 [1869-1874]: 82; pl. 31, fig. 5 (West Africa).

This species occurs throughout the Guinean Subregion and is quite distinct from *themis*, differing in the longer, more acute forewings and in a number of details of pattern structure, as well as in the male genitalia. Although not previously recorded from Liberia, it may have passed unnoticed among *themis* captures.

Liberia: Harbel, 1 ♀, V, 1 ♂, 1 ♀, X; Ganta, 15 ♂, 1 ♀, V, 5 ♂, VI, 4 ♂, VII; Wanau Forest, 1 ♂, I, 1 ♂, 1 ♀, II, 1 ♂, 3 ♀, III, 1 ♂, X; St. Paul River at Zorzor Road, 1 ♀, III; trail near Fisabu, 1 ♂, X (Fox); Monrovia, 1 ♀ (Carnegie Museum).

Najas ceres ceres (Fabricius)

Papilio ceres Fabricius, 1775: 504 (West Africa).

This is still another species subject to a remarkable range of infrasubspecific variation in coloring and a number of synonymous names have been erected. Only a careful analysis of male genitalia and of pattern anatomy can be relied upon for accurate identification, so that it is not surprising that Aurivillius (1908-1925) completely misunderstood the species, confusing several different ones under the name *ceres* and listing some subspecies and aberrations of *ceres* as being distinct.

The nominate subspecies occurs in forests throughout the Occidental area as far west as Senegal and in Cameroons.

Liberia: Harbel, 1 ♀, I, 1 ♀, IV, 1 ♀, VI, 1 ♂, X, 1 ♂, 3 ♀, XI; Kpain, 1 ♀, V; Ganta, 1 ♀, I, 7 ♂, 2 ♀, II, 7 ♂, 4 ♀, III, 1 ♂, IV, 64 ♂, 52 ♀, V, 28 ♂, 15 ♀, VI, 12 ♂, 5 ♀, VII, 2 ♂, VIII, 1 ♂, 2 ♀, IX, 2 ♂, X, 1 ♂, 1 ♀, XI (Fox), 1 ♀, VI, 1 ♀, VII (Harley, A.M.N.H.), 3 ♂, X (Leland, A.M.N.H.); Wanau Forest, 3 ♂, 1 ♀, I, 3 ♂, 3 ♀, II, 6 ♂, 5 ♀, III, 2 ♂, V, 1 ♂, VI, 1 ♂, 1 ♀, VII, 3 ♂, 1 ♀, X; St. Paul River at Zorzor Road, 3 ♂, 1 ♀, V; Zorzor, 2 ♂, 1 ♀, XI; trail near Fisabu, 1 ♂, XI, 3 ♂, 1 ♀, XII; Bomi Hills, 2 ♂, 1 ♀, IV; trail from Voinjama to Yendamalahoun, 3 ♂, IV; Yendamalahoun, 8 ♂, 3 ♀, IV (Fox); no data, 1 ♀ (Cooper, A.M.N.H.); eastern Liberia, 18 specimens II, III, IV, V (Condamin, 1951); Sharpe (1906) from Reynolds and Whicker collections.

Guinea: Wangazi Range, road from Macenta to 'Nzerekore, 1 ♂, IV (Fox).

Figs. 151-152. Fig. 151, upperside, fig. 152, underside, *Najas francina* (Godart), female, Monrovia, Liberia. Natural size.

Najas francina (Godart) (Figs. 151, 152)

Nymphalis francina Godart, 1821 [1819-1823]: 390 (Coast of Guinea).

This distinctive species is known only from Sierra Leone and Liberia. I found it in deep forests.

Liberia: Wanau Forest, 1 ♀, II; Bomi Hills, 1 ♀, IV (Fox); Monrovia, 3 ♂, 4 ♀ (Muller, in Carnegie Museum); Touzon, 1 specimen, IV (Condamin, 1951).

Najas edwardsii (Hoeven)

Aterica edwardsii Hoeven, 1845: 252; pl. 4, figs. 1a and 1b (Guinea).

The species occurs from Sierra Leone to Uganda but appears to be rare. I found it in the interior of Liberia frequenting spoiling fruit on the ground in open forest.

Liberia: Ganta, 1 ♂, III, 5 ♂, 6 ♀, V, 4 ♂, 3 ♀, VI, 2 ♂, 2 ♀, VII; Wanau Forest, 1 ♀, I (Fox); Diyala, 1 ♂, V (Condamin, 1951).

Najas eleus eleus (Drury)

Papilio eleus Drury, 1782 [1770-1782], 3: 14; pl. 12, figs. 1 and 2 (Sierra Leone).
=*Romalaeosoma zampa* Westwood, 1850 [1846-1852]: 284 (Sierra Leone).

The species is subject to a striking color variation in which the orange-tawny ground color is replaced by a dark blue-green, probably

the consequence of differential oxidation of the pigment melanin. Completely blue-green specimens were named *zampa,* but various kinds of intergrades exist in which only one pair of wings or only parts of the wings are affected. The nominate subspecies is found in the forests of the Guinean Subregion and other subspecies occur in East Africa.

Liberia: Ganta, 1 ♂, 1 ♀, II, 1 ♀, III, 1 ♂, 4 ♀, V, 1 ♂, VII; Wanau Forest, 1 ♂, I, 1 ♂, 1 ♀, III, 1 ♀, X (Fox); Ziabli, 2 specimens, IV (Condamin, 1951); Buttikofer (1890) and Sharpe (1906), including *"zampa"*.

Najas perseis (Drury)

Papilio perseis Drury, 1773 [1770-1782], 2: 37; pl. 21, figs. 3 and 4 (Sierra Leone).

This species is known only from Sierra Leone and Liberia.

Liberia: Ganta, 1 ♀, II, 3 ♀, V; Wanau Forest, 1 ♀, III, 1 ♀, V; St. Paul River at Zorzor Road, 1 ♂, III (Fox); Diyala, 1 specimen, V (Condamin, 1951); Buttikofer (1890) and Sharpe (1906).

Najas eusemoides eusemoides (Grose-Smith and Kirby)

Euryphene eusemoides Grose-Smith and Kirby, 1889 [1887-1902], 1: *Euryphene* pl. 1, figs. 1 and 2 (No locality cited).

The nominate species appears to be confined to Occidental Africa and not found in the Congo as claimed by Aurivillius (1908-1925).

Liberia: Wanau Forest, 1 ♀, II (Fox); Touzon, 2 specimens, IV (Condamin, 1951).

Genus **HAMANUMIDA** Hübner

Hamanumida Hübner, [1819] [1816-1826]: 18. Type-species: *Papilio daedalus* Fabricius, 1775, designated by Scudder, 1875.

The single species in this genus differs markedly from all other African Liminitini both in structure and in habits. It is found nearly everywhere in tropical Africa.

Hamanumida daedalus (Fabricius)

Papilio daedalus Fabricius, 1775: 482 (Africa).

This species flies only in drier, open places and prefers to rest, the wings spread flat, in the dust of road or around tribal homes. It appears to thrive in ecologically disturbed regions.

Liberia: Harbel, 1 ♂, II, 1 ♀, X; Gbanga, 3 ♂, 2 ♀, X; Ganta, 1 ♀, III, 1 ♂, 1 ♀, V; 1 ♂, 1 ♀, VI; Wanau Forest (Wanau town compound), 3 ♂, 4 ♀, II, 1 ♂, 2 ♀, III, 1 ♀, X; Bomi Hills (mining company compound), 5 ♂, 1 ♀, IV; Yendamalahoun (town compound), 1 ♂, IV (Fox); eastern Liberia, 17 specimens II to IV (Condamin, 1951); Buttikofer (1890) and Sharpe (1906).

Genus **ATERICA** Boisduval

Aterica Boisduval, 1833a: 195. Type-species: *Aterica rabena* Boisduval, by monotypy.

There are two species, *A. rabena* of Madagascar and *A. galene*.

Aterica galene (Brown)

Papilio galene Brown, 1776: 34; pl. 97 (No locality cited).

This is a forest species found everywhere in tropical Africa where the rainfall is sufficiently high, and usually is quite common.

Liberia: Harbel, 2 ♂, I, 1 ♂, 1 ♀, X, 2 ♂, XI, 1 ♂, XII; Fish Lake, 2 ♂, I, 1 ♂, XII; Ganta, 1 ♂, II, 1 ♂, 1 ♀, III, 13 ♂, 7 ♀, V, 5 ♂, 2 ♀, VI, 1 ♂, 2 ♀, VII, 1 ♂, VIII, 1 ♂, IX, 1 ♀, X; Wanau Forest, 2 ♀, I, 3 ♂, II, 9 ♂, 2 ♀, III, 1 ♂, V, 4 ♂, 3 ♀, X; Kitoma, 1 ♂, VIII; Zorzor, 4 ♂, XI; Bomi Hills, 1 ♂, IV; Yendamalahoun, 2 ♂, 3 ♀, IV (Fox); eastern Liberia, 12 specimens (Condamin, 1951); Buttikofer (1890) and Sharpe (1906).

Genus **CYNANDRA** Schatz

Cynandra Schatz, 1888 [1885-1892]: 161. Type-species: *Papilio afer* Drury, by monotypy.

This genus is endemic to the African Region, the single known species occurring in forests and frequenting trails.

Cynandra opis opis (Drury)

Papilio opis Drury, 1773 [1770-1782], 2: 33; pl. 18, figs. 5 and 6 (♀, Sierra Leone).
=*Papilio afer* Drury, 1782 [1770-1782], 3: 49; pl. 36, figs. 1 and 2 (♂, Sierra Leone).

The sexes are quite unlike and Drury described them as different species; each resembles a species of *Euriphene*. The male is bright, shining blue above, with black bands and, in the forewing apex, some

white dots. The female is ochre brown with a prominent pale brown band crossing both wings.

Liberia: Harbel, 2 ♂, I, 1 ♂, II, 3 ♂, V, 5 ♂, 1 ♀, VIII, 10 ♂, 1 ♀, IX, 4 ♂, X, 4 ♂, XI, 3 ♂, XII; Fish Lake, 3 ♂, I; Ganta, 1 ♂, I, 3 ♂, II, 5 ♂, 1 ♀, V, 1 ♂, VI, 1 ♂, VII, 1 ♂, IX, 1 ♂, XI; Wanau Forest, 1 ♀, I, 1 ♂, II, 2 ♂, III, 2 ♂, VI, 2 ♂, X; Zorzor, 2 ♂, XI; Bomi Hills, 1 ♂, IV; Yendamalahoun, 2 ♂, 3 ♀, IV (Fox); eastern Liberia, 4 specimens, III, V (Condamin, 1951); Buttikofer (1890); Sharpe (1906).

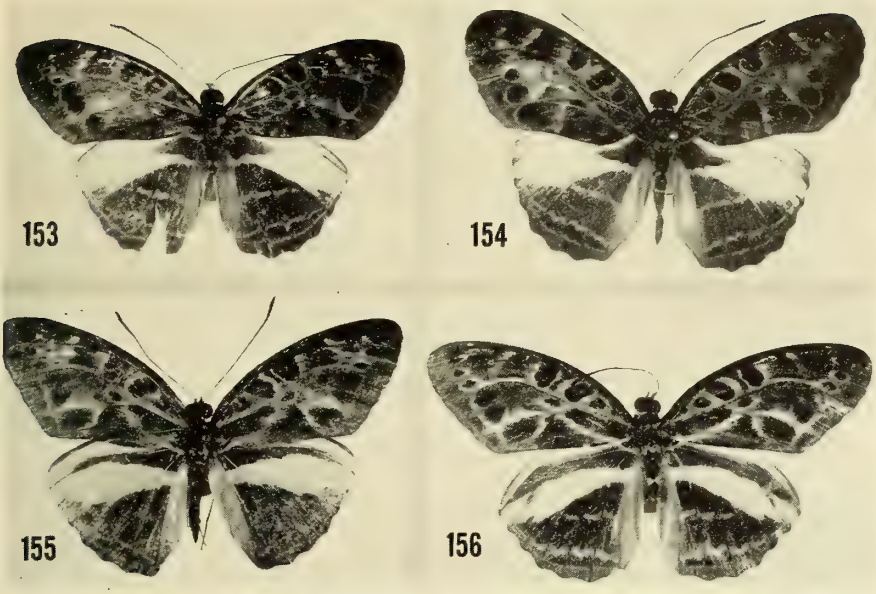
Genus **CATUNA** Kirby

Catuna Kirby, 1871: 238, to replace *Euomma* C. and R. Felder, 1867.
=*Euomma* C. and R. Felder, 1867 [1864-1867]: 425, to replace *Jaera* Hübner, [1819]. (Preoccupied).
=*Jaera* Hübner, [1819] [1816-1823]: 38. (Preoccupied). Type-species: *Papilio crithea* Drury, designated by Hemming, 1943.

Since a generic name proposed to replace another must take the same type-species as the replaced genus, Kirby's designation of *Euomma angustata* Felder as type-species of *Catuna* (Zoo. Rec., 1871) was invalid.

Four species, one of which is described below as new, occur in Liberia and a fifth is found in East Africa. All four Liberian species are closely similar, but may be distinguished by the following key.

1. Forewing above with a dark spot in the base of cell M_3-Cu_1 ..... *crithea*
   Forewing above without a dark spot in the base of cell M_3-Cu_1 2
2. Forewing above with the light line running from the base of the wing to the fork of Cu_2 curved and somewhat irregular, enclosing a spot in the base of Cu_2-A which contains two tiny light streaks. ..... *oberthuri*
   Forewing above with the light line running from the base of the wing to the fork of Cu_2 nearly straight and enclosing a rhomboid spot in the base of Cu_2 which is evenly dark brown without light streaks. 3
3. The dark postdiscal spot of the forewing between A and the hind margin much larger than its homologue in Cu_1-Cu_2; the pale patch of the hindwing bounded anteriorward by a brown line which reaches the margin of the wing at the tip of the radius ..... *angustata*
   The dark postdiscal spot of the forewing between A and the hind margin no larger than its homologue in Cu_1-Cu_2; hindwing with a triangular dark streak confined to the base, not reaching the outer margin. ..... *niji*



Figs. 153-156. Fig. 153, upperside, *Catuna niji* new species, holotype male, Fish Lake, Liberia. Fig. 154, upperside, *Catuna crithea* (Drury), male, Fish Lake, Liberia. Fig. 155, upperside, *Catuna oberthuri* Karsch, male, Bomi Hills, Liberia. Fig. 156, upperside, *Catuna angustata* (Felder and Felder), male, Ganta, Liberia. All natural size.

Catuna crithea (Drury) (Figs. 154, 158)

Papilio crithea Drury, 1773 [1770-1782], 2: 29; pl. 16, figs. 5 and 6 ("A part of Africa situated in about six degrees of North latitude.').

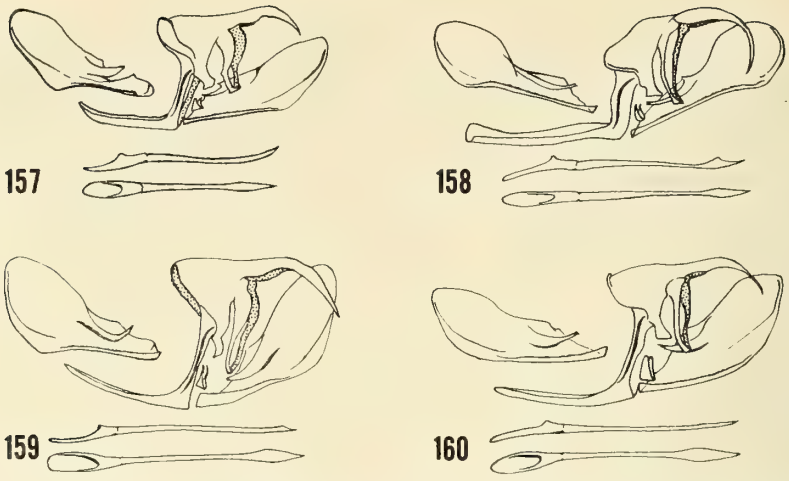
Drury's specimen probably came from the Sierra Leone-Liberia region. The species is distributed from Sierra Leone to Uganda.

Liberia: Harbel, 2 ♂, I, 1 ♂, III, 2 ♂, 1 ♀, V, 1 ♂, X, 1 ♂, XI, 1 ♂, XII; Fish Lake, 6 ♂, 4 ♀, I, 1 ♂, XII; Ganta, 1 ♀, II, 1 ♀, III, 2 ♂, V, 2 ♂, 1 ♀, VI, 3 ♂, 1 ♀, VII, 1 ♂, VIII, 1 ♂, X (Fox); 1 ♀, X (Leland, A.M.N.H.); Wanau Forest, 1 ♂, I, 1 ♀, II, 1 ♂, III; Zorzor, 1 ♂, XI; trail near Fisabu, 2 ♂, XII; Bomi Hills, 1 ♂, 2 ♀, IV; Yendamalahoun, 1 ♂, IV (Fox); eastern Liberia, 2 specimens, III, V (Condamin, 1951); Buttikofer (1890).

Catuna oberthuri Karsch (Figs. 155, 159)

Catuna oberthuri Karsch, 1894: 175 (Cameroons). [1892a: 175].

The reference to Karsch, 1892, is generally cited as the original de-



Figs. 157-160. Male genitalia, the left valve and the penis separated. Fig. 157, *Catuna niji* new species, holotype, Fish Lake, Liberia. Fig. 158, *Catuna crithea* (Drury), Harbel, Liberia. Fig. 159, *Catuna oberthuri* Karsch, Wanau Forest, Liberia. Fig. 160, *Catuna angustata* (Felder and Felder), Ganta, Liberia, All drawn to same scale: ½ inch = 1 mm. Each penis is shown in lateral (above) and dorsal (below) views.

scription but it is a mention only, without diagnosis of any kind, of the name *oberthuri*, which is there credited to Ritsema. The first description was published in 1894. The species is found throughout the forests of the Guinean Subregion. I found it only in the interior.

Liberia: Ganta, 7 ♂, II, 1 ♂, III, 6 ♂, V, 1 ♂, VII (Fox); 1 ♂, VII (Harley, A.M.N.H.); Wanau Forest, 1 ♂, I, 6 ♂, II, 8 ♂, 1 ♀, III, 2 ♂, V; St. Paul River at Zorzor Road, 1 ♂, IV, 1 ♂, V; Bomi Hills, 6 ♂, 1 ♀, IV; Yendamalahoun, 1 ♂, IV (Fox); Grand Cess, 1 ♂ (Naysmith); Bonata, 4 ♂, II (Leland, A.M.N.H.); eastern Liberia, 26 specimens, III, IV, V (Condamin, 1951); Buttikofer (1890).

Catuna angustata (C. and R. Felder) (Figs. 156, 160)

Euomma angustata C. and R. Felder, 1867 [1864-1867]: 425 (Guinea Coast, Old Calabar).

In Carnegie Museum this species is represented from Sierra Leone, Liberia, Cameroons, Gabon and Congo.

Liberia: Fish Lake, 1 ♂, XII; Kpain, 1 ♂, V; Ganta, 3 ♂, III, 4 ♂, V, 1 ♀, VI, 6 ♂, VII, 1 ♂, 1 ♀, VIII, 1 ♂, X; Wanau Forest,

2 ♂, 1 ♀, I, 3 ♂, II, 1 ♂, III, 1 ♂, V, 7 ♂, VIII, 1 ♂, X; Yendamalahoun, 5 ♂, IV (Fox); Grand Cess, 2 ♂ (Naysmith); eastern Liberia, 7 specimens, III, IV, V (Condamin, 1951); Buttikofer (1890).

Catuna niji new species (Figs. 153, 157)

[? *Catuna rectecostata* Buttikofer, 1890: 482, attributed to Ritsema. Sharpe, 1906: 876, citing Buttikofer.]

Three males taken at Fish Lake differ in pattern from the other three species found in Liberia, as indicated in the above key, as well as in the configuration of the male genitalia. Buttikofer (1890) may have recorded this species as "*rectecostata* Ritsema", apparently a manuscript name for which no description has ever been published.

Male. — (Fig. 153.) The general coloring and pattern on both sides of both wings are similar to the other three species. Cell M_3-Cu_1 of forewing above lacks a darkened spot at its base, in this respect being similar to *oberthuri* (fig. 155) and *angustata* (fig. 156) but differing from *crithea* (fig. 154). The darker patch at the base of the forewing above, enclosed by the light line over the base of cubitus and running from cubitus to the hind margin, is nearly rhomboid and unmarked by white lines or spots; in *crithea* this spot is triangular and the light line on its distal boundary runs perpendicular to the cubitus and hind margin; in *oberthuri* the same line is curved and irregular and the spot contains one or more light streaks or dots; in *angustata* the spot is shaped nearly as in *niji* but the lower, outer line is more curved and the spot often contains light marks. The dark postdiscal spot Cu_2-A is the same size as its homologue in Cu_1-Cu_2 in *niji,* but is very much larger in both *angustata* and *oberthuri,* while in *crithea* it is very much smaller and sometimes absent. On the hindwing *niji* has at the base a dark triangular spot, its apex in the base of cell M_2-M_3, and distally enclosed by a pale patch which extends anterior to the costal margin; males of *crithea* have a similarly formed dark triangular spot, but in *oberthuri* and *angustata* the spot is generally extended over the radius to the margin.

On the underside the markings are not nearly as strong in *niji* as in *crithea* and *angustata* and the two dark lines paralleling the outer margin are never evident; the underside of *niji* most resembles that of *oberthuri* but the ground color is somewhat more yellowish.

The male genitalia (fig. 157) differ from those of *crithea* (fig. 158), *angustata* (fig. 160) and *oberthuri* (fig. 159) in the shape of the valve, of the uncus and of the penis.

Holotype ♂. — Fish Lake, Liberia, 28 December 1954, R. M. Fox.

Two ♂ paratypes, same locality and collector, 7 January 1955.

The Bassa tribe, who inhabit the country near Fish Lake, believe that there is a water witch, called a *niji,* who upsets canoes and takes the souls of the drowned.

Genus **PSEUDONEPTIS** Snellen

Pseudoneptis Snellen, 1882: 221. Type-species: *Papilio coenobita* Fabricius, by monotypy.

The sole species belonging to this genus is found in deep forests from Sierra Leone to Uganda and south to Angola.

Pseudoneptis coenobita (Fabricius)

Papilio coenobita Fabricius, 1793 [1793-1794], (1): 247 ("India").

I found this delicate butterfly only in the interior.

Liberia: Gbanga, 1 ♀, X; Kpain, 1 ♂, X; Ganta, 3 ♂, 6 ♀, II, 1 ♂, 1 ♀, III, 3 ♂, 1 ♀, V, 3 ♀, VI, 1 ♂, 2 ♀, VII, 1 ♀, VIII, 1 ♂, 1 ♀, X; Wanau Forest, 3 ♂, 1 ♀, II, 2 ♂, 4 ♀, III, 1 ♀, V, 2 ♀, VI, 1 ♂, X; St. Paul River at Zorzor Road, 2 ♂, 2 ♀, III; Zorzor, 1 ♀, XI; Bomi Hills, 1 ♀, IV; Yendamalahoun, 2 ♂, 2 ♀, IV (Fox); eastern Liberia, 10 specimens, II to V (Condamin, 1951); Buttikofer (1890); Sharpe (1906) from Whicker Collection.

Genus **PSEUDACRAEA** Westwood

Pseudacraea Westwood, 1850 [1846-1852]: 281. Type-species: *Papilio hirce* Drury, designated by Scudder, 1875.

This genus contains a number of species of diverse size, shape and coloring but all basically alike morphologically. Some bear remarkable similarities to members of totally unrelated genera like *Acraea, Danais* and *Bematistes,* while others are perfectly normal-looking *Nymphalinae.* In view of the advantage mimicry is thought to confer, it is odd that the normal-looking species of *Pseudacraea* are so much more common than the mimetic ones.

Buttikofer (1890) recorded one species, Condamin (1951) three others and my own collecting revealed the presence of a total of eight species in Liberia.

Pseudacraea semire (Cramer)

Papilio semire Cramer, 1779 [1775-1791], 3: 3; pl. 194, figs. B and C (Sierra Leone).

Distributed from Sierra Leone to Uganda and Angola, this non-mimetic species is brownish black on the upperside with some black dots and a prominent green patch on each wing.

Liberia: Harbel, 2 ♂, I; Fish Lake, 1 ♀, I; Ganta, 3 ♀, II, 3 ♂,

3 ♀, V, 4 ♀, VI, 1 ♀, VIII, 1 ♂, X; Wanau Forest, 1 ♀, II, 3 ♀, III; Yendamalahoun, 1 ♀, IV (Fox); no data, 1 ♂ (Naysmith); Kaouyeke, 2 specimens (Condamin, 1951).

Pseudacraea hostilla (Drury)

Papilio hostilla Drury, 1782 [1770-1782], 3: 38; pl. 28, figs. 5 and 6 (Sierra Leone).

This and the following species were said by Aurivillius (1908-1925) to be *acraea*-like; in general aspect both are typically nymphaline, with little resemblance to *Acraea* species in wing shape, though they are orange-tawny with black markings. *P. hostilla* has a series of broad tawny submarginal spots on the hindwing separated from the tawny discal area by a narrow scalloped black line, while in *warburgi* (the next species) these submarginal spots are narrow and placed within a wide black band. *P. hostilla* is rare and has not been previously recorded from Liberia, though it is known to be endemic to Occidental Africa.

Liberia: Wanau Forest, 1 ♂, III (Fox); Monrovia, 1 ♂ (Muller, in Carnegie Museum).

Pseudacraea warburgi Aurivillius

Pseudacraea warburgi Aurivillius, 1892: 200 (Cameroons).

Originally described as a separate species and compared with *hostilla*, *warburgi* was treated as a "variation" of *hostilla* by Aurivillius (1892) and later (1908-1925: 194) as the "southern race". It is, in fact, a good species and occurs throughout the Guinean Subregion. The first record for Liberia is represented by the series below.

Liberia: Harbel, 1 ♀, X; Ganta, 3 ♂, 1 ♀, V; Wanau Forest, 1 ♀, II, 1 ♀, III (Fox).

Pseudacraea boisduvali boisduvali (Doubleday)

Diadema boisduvali Doubleday, 1845: 180 (Ashanti). Doubleday and Hewitson, 1850 [1846-1852]: pl. 37, fig. 3.

The nominate subspecies is found throughout the Guinean Subregion, with another subspecies in East Africa, but has not been previously recorded from Liberia. *P. boisduvali* has a certain resemblance to *Acraea egina*, though its greater size and different way of

flying would seem to preclude confusing the two on the wing.

Liberia: Ganta, 1 ♂, III, 1 ♀, VI, 1 ♂, VIII; Wanau Forest, 1 ♀, III (Fox); Monrovia, 1 ♀ (Muller, in Carnegie Museum).

Pseudacraea eurytus (Linné)

Papilio eurytus Linné, 1758: 487 ("India").

This variable species is distributed throughout the Guinean Subregion and seems to be fairly common in Liberia. *P. eurytus* resembles *Bematistes epaea* in size, coloring and pattern to a remarkable degree.

Liberia: Harbel, 1 ♂, I, 1 ♀, X, 1 ♂, XII; Ganta, 1 ♀, V, 1 ♀, VI, 1 ♀, VII, 1 ♀, IX; Wanau Forest, 1 ♂, I, 2 ♀, II, 3 ♂, 1 ♀, III, 1 ♂, X; Zorzor, 2 ♀, XI (Fox); Buttikofer (1890).

Pseudacraea striata Butler

Pseudacraea striata Butler, 1874a: 215 (Ambriz [N. Angola?]).
=*Diadema eurytus*: Hewitson (not Linné), 1868 [1852-1876], 4: [49]; pl. [27], fig. 9 (Calabar).

This is another variable species present everywhere in the forests of the Guinean Subregion. It resembles *Bematistes vestalis* and is not rare in Liberia.

Liberia: Harbel, 1 ♂, X; Fish Lake, 2 ♀, I; Ganta, 1 ♂, 2 ♀, II, 2 ♀, VI; Wanau Forest, 2 ♂, I, 4 ♂, 1 ♀, II, 1 ♂, 4 ♀, III, 1 ♀, V, 1 ♂, X; Wozi, 1 ♂, XI; Yendamalahoun, 1 ♂, 2 ♀, IV (Fox); Maloubli, 1 specimen, IV (Condamin, 1951).

Pseudacraea simulator Butler

Pseudacraea simulator Butler, 1873: 125 (West Africa).

Endemic to Occidental Africa, this species resembles several rare species of *Bematistes*. It has not been previously recorded from Liberia.

Liberia: Ganta, 1 ♀, VI; Wanau Forest, 1 ♀, II, 1 ♂, III; Yendamalahoun, 1 ♀, IX (Fox).

Pseudacraea lucretia lucretia (Cramer)

Papilio lucretia Cramer, 1775 [1775-1791], 1: 79; pl. 45, figs. C and D (Coast of Guinea).

This species is widely distributed in most of the tropical African forests, with the nominate subspecies found from Sierra Leone to western Kenya. *P. lucretia* is broad-winged, of a typically nymphalid appearance, dark blackish brown with some prominent white (sometimes creamy) spots.

Liberia: Harbel, 1 ♀, V; Kpain, 1 ♂, V; Ganta, 4 ♂, II, 1 ♂, III, 1 ♂, IV, 1 ♂, 3 ♀, V, 1 ♂, VI (Fox), 1 ♂, VII (Harley, A.M.N.H.), 1 ♂, VIII; Wanau Forest, 6 ♂, 4 ♀, II, 19 ♂, III, 5 ♂, V, 1 ♂, VI (Fox); Penoke, 2 specimens, IV (Condamin, 1961).

Tribe NEPTINI

The single genus occurs both in the African and the Indo-Australian regions. The tribal name is sometimes spelled "Neptidini", but since the name of the type genus appears to be derived from the Latin *neptis, -is,* using a Greek expansive form is incorrect.

Genus **NEPTIS** Fabricius

Neptis Fabricius, 1807: 282. Type-species: *Papilio aceris* Esper (=*Papilio hylas* Linné), designated by Crotch, 1872.

The species are black and white and most of them frequent agricultural lands, thriving in ecologically disturbed areas. The genus was reviewed by Eltringham (1921).

Buttikofer (1890) recorded two species from Liberia, Sharpe (1906) added a third, Condamin (1951) listed three more; five new records are included below, bringing the total to eleven.

Neptis metella Doubleday and Hewitson

Neptis metella Doubleday and Hewitson, 1850 [1846-1852]: 272; pl. 35, fig. 2 (Sierra Leone).

Distributed from Sierra Leone to western Kenya, this is the only species in Liberia with yellow markings on the underside of the wings.

Liberia: Harbel, 1 ♂, I; Kpain, 1 ♂, X; Ganta, 1 ♀, II, 1 ♂, V, 1 ♀, VII, 1 ♂, no date; Wanau Forest, 1 ♂, II, 1 ♂, III, 1 ♂, VI; Zorzor, 3 ♂, XI; Yendamalahoun, 1 ♂, IV (Fox); Barclayville, 1 specimen, III (Condamin, 1951).

Neptis nemetes Hewitson

Neptis nemetes Hewitson, 1868 [1852-1876], 4: [45]; pl. [25], figs. 1 and 2 (Sierra Leone).

The nominate subspecies is distributed from Sierra Leone through the Congo Valley, with other subspecies in East Africa. I found it to be quite common at the weedy margins of cassava fields and to be present throughout the year.

Liberia: Harbel, 2 ♂, 4 ♀, I, 1 ♂, 2 ♀, II, 3 ♂, III, 2 ♀, IV, 3 ♂, V, 1 ♂, VI, 1 ♂, VII, 2 ♂, X, 2 ♂, XI, 2 ♂, XII; Fish Lake, 1 ♂, I, 3 ♂, XII; Kpain, 1 ♂, X; Ganta, 1 ♂, 2 ♀, II, 1 ♂, 1 ♀, V, 1 ♀, VI; Wanau Forest (in glades), 1 ♂, I, 2 ♂, II, 1 ♂, 2 ♀, III, 1 ♂, 1 ♀, X; Zorzor, 1 ♀, XII (Fox); "West Africa" (undoubtedly eastern Liberia), 1 ♀ (Naysmith); eastern Liberia, 5 specimens, III, IV (Condamin, 1951); Buttikofer (1890).

Neptis agatha (Stoll)

Papilio agatha Stoll, 1780 [1775-1791], 4: 76; pl. 327, figs. A and B (Sierra Leone).

The species occurs from Sierra Leone to Abyssinia and Rhodesia. It seems to be less common in Liberia than in Cameroons.

Liberia: Harbel, 2 ♂, 1 ♀, I, 1 ♂, III, 1 ♀, IV, 2 ♂, XI, 1 ♂, XII; Kpain, 1 ♀, V; Ganta, 1 ♀, V (Fox); "Grand Ses" [Cess], 1 ♀; Bigtown, 1 ♀ (Naysmith); Webo, 1 specimen (Condamin, 1951).

Neptis nysiades Hewitson

Neptis nysiades Hewitson, 1868 [1852-1876], 4: [45]; pl. [25], figs. 3 and 4 (Old Calabar).

This species is distributed from Sierra Leone to Uganda. In Liberia I found it to be commoner in the interior.

Liberia: Harbel, 1 ♂, II, 1 ♂, V; Ganta, 3 ♀, II, 1 ♀, III, 1 ♀, V, 1 ♂, X; Wanau Forest, 1 ♀, II, 1 ♀, X (Fox); Penoke, 1 specimen, IV (Condamin, 1951).

Neptis nicomedes Hewitson

Neptis nicomedes Hewitson, 1874a: 205 (Angola).
=*Neptis quintilla* Mabille, 1890a: 21; pl. 2, fig. 7 (Ivory Coast).
=*Neptis puelloides* Eltringham, 1921: 578-579 (Gold Coast).

The forewing cell may be entirely black (*puelloides*) or contain some white spots; the white discal band may have its proximal side strongly angled (*quintilla*) or straight. These are infrasubspecific variations. The species is distributed throughout the Guinean Subregion, but has not been previously recorded from Liberia.

Liberia: Ganta, 1 ♂, V; Wanau Forest, 1 ♂, II, 1 ♂, III, 1 ♂, X; St. Paul River at Zorzor Road, 1 ♂, III; Yendamalahoun, 2 ♂, IV (Fox).

Neptis biafra Ward

Neptis biafra Ward, 1871: 121 (Cameroons). 1874: 12; pl. 9, figs. 1 and 2. Holland, 1892a: pl. 9, fig. 10. Eltringham, 1921: 570-573.

This species has heretofore been known only from Cameroons. In his review of the genus, Eltringham (1921) claimed that Holland (1892) misidentified *biafra*. The specimen from Gabon figured by Holland is at hand, as is a series of four females obtained more recently from Cameroons. Holland's photograph (1892) is not particularly good but the specimen is unquestionably correctly identified. I find some variation in pattern in the Cameroons series. A female from Batanga agrees exactly with Ward's figure (1874) and a female from Efulen with Eltringham's (1921). The male from Wanau Forest, Liberia, seems to be the same species. It is unfortunate that Eltringham did not utilize the male genitalia.

Liberia: Wanau Forest, 1 ♂, III (Fox).

Neptis paula Staudinger

Neptis paula Staudinger, 1896: 368; pl. 8, fig. 2 (Sierra Leone).

This rare species, previously known only from Sierra Leone, is here recorded from Liberia for the first time.

Liberia: Ganta, 1 ♀, III (Fox).

Neptis nicoteles Hewitson

Neptis nicoteles Hewitson, 1874a: 206 (Angola).

This species occurs throughout the Guinean Subregion, as far east as Kenya and south to Angola, but has not previously been found in Liberia.

Liberia: Harbel, 1 ♂, 1 ♀, I, 1 ♂, III, 1 ♀, V; Ganta, 1 ♀, VI; Wanau Forest, 1 ♀, X (Fox).

Neptis nicobule Holland

Neptis nicobule Holland, 1892a: 249; pl. 9, fig. 7 (Gabon).

This species is represented in Carnegie Museum by the holotype from Kangwe, Gabon, a series from Cameroons and the two females from Liberia, the first record from that country.

Liberia: Ganta, 1 ♀, II; St. Paul River at Zorzor Road, 1 ♀, V (Fox).

Neptis nebrodes Hewitson

Neptis nebrodes Hewitson, 1874a: 206 (Angola).

This species, found in the Guinean Subregion, is not common.

Liberia: Harbel, 1 ♂, V; Wanau Forest, 2 ♂, III (Fox); Sharpe (1906) from Whicker Collection.

Neptis melicerta (Drury)

Papilio melicerta Drury, 1773 [1770-1782], 2: 34; pl. 19, figs. 3 and 4 (Sierra Leone).

Distributed from Sierra Leone to East Africa and south to Angola, this species is quite variable in many details of marking. It is the commonest member of the genus in Liberia and is always found in fields or along the margins of secondary bush.

Liberia: Harbel, 1 ♂, I, 3 ♂, V, 1 ♂, VI, 1 ♀, VII, 1 ♂, VIII, 1 ♂, X, 1 ♂, XI; Kpain, 1 ♀, V; Ganta, 1 ♂, II, 1 ♀, III, 3 ♂, V, 3 ♂, 8 ♀, VI, 1 ♂, 1 ♀, VII, 1 ♂, XII; Wanau Forest, 3 ♂, I, 4 ♂, II, 5 ♂, 2 ♀, III, 1 ♂, VI, 1 ♂, 1 ♀, X; Zorzor, 2 ♂, V, 11 ♂, XI, 1 ♂, XII; trail near Fisabu, 3 ♂, XII; Wozi, 1 ♂, XII; Yendamalahoun, 5 ♂, 5 ♀, IV (Fox); eastern Liberia, 16 specimens, III, IV, V (Condamin, 1951); Buttikofer (1890).

Tribe Marpesini

There are three genera in this tribe, one in tropical America, one in tropical Eurasia and one occurring in both Eurasia and Africa.

Genus **CYRESTIS** Boisduval

Cyrestis Boisduval, 1832: 117. Type-species: *Papilio thyonneus* Cramer, designated by Scudder, 1875.

The genus is primarily Indo-Australian, but there are two species in Africa and one of them occurs in Liberia.

Cyrestis camellus (Fabricius)

Papilio camellus Fabricius, 1781: 11 (Equatorial Africa).

This species is widely distributed from Sierra Leone to Abyssinia. In Liberia I found it only in the interior.

Liberia: Ganta, 1 ♂, V; Wanau Forest, 1 ♂, II, 1 ♂, III, 1 ♂, 1 ♀, X; trail near Fisabu, 1 ♂, XII (Fox); eastern Liberia, 3 specimens, II, IV, V (Condamin, 1951).

Tribe EUNICINI

This tribe is richly represented in the American tropics by a series of genera, one of which also occurs in Africa.

Genus **EUNICA** Hübner

Eunica Hübner, [1819] [1816-1826]: 61. Type-species: *Papilio monima* Stoll, designated by Scudder, 1875.
=*Crenis* Boisduval, 1833a: 196. Preoccupied by *Crenis* Hübner, 1821.

Crenis Boisduval (1833), of which the sole species included was *C. madagascarensis,* has been used for the African members of this genus, but must be abandoned for two reasons. First, *Crenis* Boisduval is a homonym for *Crenis* Hübner, 1821, of which the type species is *Crenis brylle* Hübner, 1821, a species earlier (in 1813) named by Hübner as *Nereis delila.* The name *Crenis* is therefore a synonym for *Heliconius* Kluk and has nothing whatever to do with the tribe Eunicini. Second, the African butterflies formerly assigned to *Crenis* Boisduval are congeneric with the American butterflies belonging to *Eunica,* a situation long ago noted by Aurivillius (1908-1925: 204).

Lacking the definitive evidence that could be supplied by a fossil record, one can only speculate on the events leading to the present distribution of *Eunica* on both Africa and America — an unusual pattern but not without precedent. Land bridges and continental drift as possible explanation can be dismissed out of hand: had either situation occurred, this kind of distributional pattern would be the rule rather than the exception and we should find a great many genera in

common to the two continents. The more probable explanation is in accord with the Matthews (1912) theory, based on mammalian distribution and an adequate fossil record. *Eunica* must have been distributed on Eurasia and North America at a time when those continents were far warmer and more humid; changing climatic conditions forced the butterflies southward into the American and African tropics, eliminating them in the colder north.

Two species of *Eunica* probably are to be found in Liberia, though neither has yet been recorded from there. Both are uncommon rain forest forms.

[**Eunica amulia** (Cramer)]

Papilio amulia Cramer, 1777 [1775-1791], 2: 128; pl. 180, figs. C and D (Sierra Leone).

This species was described from Sierra Leone and is known to occur widely in the Guinean Subregion, but it is quite rare. The wingspread is about 50 mm.; the upperside is concolorous brown with a striking violet-blue reflection; the underside is bright orange with a few black and pale blue spots and dots.

[**Eunica occidentalium** (Mabille)]

Crenis occidentalium Mabille, 1876a: 275.

This species is a little smaller, the uppersides dark purple-brown with the margins paler, the underside of the hindwing ochre grey with brown markings, including a series of ocelli; the apex of the forewing is colored like the hindwing and is preceded by a black area with the basal half of the wing orange-brown. It has been recorded from both the Occidental and the Equatorial areas.

Tribe Biblidini[3]

This tribe includes 10 genera, three of which are endemic to the American tropics, one to the Asiatic tropics, four to Africa, and two occur in both Africa and the Indo-Australian region. All five African genera are represented in Liberia.

[3] The formation of the tribal name assumes that the Fabrician genus *Biblis* was derived from the Greek, *biblis, biblidos,* a cord of papyrus, as Boisduval implied (1833b).

Aurivillius (1898) used *Eurytela* as the type genus of the tribe and formed the name accordingly. Fruhstorfer (1912-1915: 455) designated the Indo-Australian genera as "Tribus I, Biblinae Boisduval," and in the American volume, Seitz designated the tribe as Biblidi (1913: 357), while later in the same work (p. 465) he used Ergolidi. Apparently the first family-group name applied to these insects was by Boisduval (1833b: 53), who used the vernacular "Biblides", based on *Biblis* Fabricius, 1807, one of the American genera.

Genus **BYBLIA** Hübner

Byblia Hübner, [1819] [1816-1826]: 28. Type-species: *Papilio ilithya* Cramer, by monotypy.

The genus consists of three African species, one of which is also found in the Asiatic tropics.

Byblia acheloia crameri Aurivillius

Byblia ilithyia var. *crameri* Aurivillius, 1894: 279 (Cameroons).

This subspecies occurs throughout the Guinean Subregion from Sierra Leone to Uganda and is rather common everywhere in its range. Buttikofer (1890) cites only *ilithya,* but subsequent investigators have found only *crameri* in Liberia. It seems likely that the Buttikofer record, which was repeated by Sharpe (1906), was based on a misidentification. *B. ilithya* is a savanna species and does not enter the belt of heavy rainfall in Africa.

Liberia: Harbel, 1 ♂, I, 1 ♀, III, 1 ♀, XI; Gbanga, 1 ♂, VII; Kpain, 4 ♂, V; Ganta, 2 ♂, 1 ♀, II, 1 ♂, III, 2 ♂, V, 4 ♂, VI, 1 ♂, VII, 1 ♂, XII (Fox), 1 ♀, X (Leland); Wanau Forest, 6 ♂, 1 ♀, III; Zorzor, 3 ♂, XI (Fox); Cape Palmas, 3 ♂, IX (Good); eastern Liberia, 32 specimens, II, III, IV, V (Condamin, 1951); Buttikofer (1890) as *ilithya.*

Genus **MESOXANTHA** Aurivillius

Mesoxantha Aurivillius, 1898: 153, 157. Type-species: *Papilio ethosea* Drury, by monotypy.

Aurivillius erected this genus to receive *ethosea* on the basis of the coloring and shape of the wings, so unlike related species. His decision is supported by numerous structural differences.

Mesoxantha ethosea (Drury)

Papilio ethosea Drury, 1782 [1770-1782], 3: 51-52; pl. 37, figs. 3 and 4 (Sierra Leone).

This species is restricted to primary forest and is found from Sierra Leone to Uganda. It is here recorded from Liberia for the first time.

Liberia: Ganta, 1 ♂, VI, 1 ♂, X; Wanau Forest, 1 ♂, I, 1 ♀, III, 1 ♂, 2 ♀, X; Zorzor (forest at Via River), 1 ♂, 1 ♀, XI; Yendamalahoun, 1 ♂, IV (Fox).

Genus **ERGOLIS** Boisduval

Ergolis Boisduval, 1836: pl. 4, fig. 4. Type-species: *Papilio ariadne* Linné, by monotypy.

The genus includes nine Indo-Australian and four African species. Only one is known from Liberia.

Ergolis enotrea (Cramer)

Papilio enotrea Cramer, 1779 [1775-1791], 3: 73; pl. 236, figs. A and B (Sierra Leone).

The distribution of this species is from Sierra Leone to Angola throughout coastal Cameroons and the Congo. I found it to be commonest in well-grown secondary bush.

Liberia: Harbel, 4 ♂, 1 ♀, I, 1 ♂, 1 ♀, II, 1 ♂, III, 1 ♂, V, 1 ♂, X, 2 ♂, XI, 2 ♂, XII; Kpain, 3 ♂, V; Ganta, 1 ♂, IV (trap), 1 ♀, V, 1 ♂, VIII, 1 ♂, IX, 1 ♀, X; Wanau Forest, 4 ♂, 1 ♀, II, 4 ♂, 1 ♀, III; Zorzor, 1 ♀, XI; Yendamalahoun, 4 ♂, 1 ♀ (Fox); eastern Liberia, 15 specimens, III, IV, V (Condamin, 1951).

Guinea: Wangazi Range, road from Macenta to 'Nzerekore, 1 ♂, IV (Fox).

Genus **NEPTIDOPSIS** Aurivillius

Neptidopsis Aurivillius, 1898: 153, 155. Type-species: *Papilio ophione* Cramer, by present designation.

Aurivillius erected this genus to receive two species that are remarkably similar to *Neptis* and are structurally dissimilar to their relatives. One species occurs on Madagascar and in East Africa, but the other enters the Liberian fauna.

Neptidopsis ophione ophione (Cramer)

Papilio ophione Cramer, 1777 [1775-1791], 2: 27; pl. 114, figs. E and F (Coast of Guinea).

This subspecies ranges from Sierra Leone throughout the forests of the Guinean Subregion.

Liberia: Harbel, 1 ♂, I, 5 ♂, 1 ♀, II, 1 ♂, III, 5 ♂, XI, 3 ♂, 1 ♀, XII; Kpain, 1 ♀, V; Ganta, 1 ♂, III, 1 ♂, 1 ♀, VI; Wanau Forest, 1 ♂, 1 ♀, I, 1 ♂, 1 ♀, II, 1 ♂, III, 3 ♂, V, 1 ♂, X; Zorzor, 2 ♂, 2 ♀, XI; trail near Fisabu, 1 ♂, XII (Fox); no data, 2 ♂, 1 ♀ (Naysmith); eastern Liberia, 17 specimens, II to V (Condamin, 1951); Buttikofer (1890); Sharpe (1906) from Reynolds and Whicker collections.

Genus **EURYTELA** Boisduval

Eurytela Boisduval, 1833a: 202. Type-species: *Papilio dryope* Cramer, designated by Scudder, 1875.

There are three African species, two or which occur in Liberia.

Eurytela hiarbas (Drury)

Papilio hiarbas Drury, 1782 [1770-1782], 3: 17; pl. 14, figs. 1 and 2 (Sierra Leone).

This species occurs in the rain forests from Sierra Leone to Angola and is represented in Carnegie Museum only from localities within a few hundred miles of the coast. It has not been previously recorded from Liberia.

Liberia: Ganta, 1 ♀, V, 1 ♀, VII (Fox).

Eurytela dryope dryope (Cramer)

Papilio dryope Cramer, 1775 [1775-1791], 1: 125; pl. 78, figs. E and F (Coast of Guinea and Sierra Leone).

The distribution of this subspecies is similar to that of the preceding species.

Liberia: Ganta, 1 ♂ (Fox); eastern Liberia, 4 specimens, III, IV, V (Condamin, 1951).

Tribe NYMPHALINI

Considerable confusion has centered about *Nymphalis,* its correct

author, date, type-species, and consequently, which series of genera should be included under this tribal name. Hemming (1934) showed that *Nymphalis* was proposed by Kluk in 1802 and that its type species is *Papilio polychloros* Linné. The usage of Aurivillius to designate the African Liminitini was therefore incorrect. The tribe is found everywhere in the world and six genera occur in Liberia.

Genus **KALLIMA** Doubleday

Kallima Doubleday, 1850 [1846-1852]: 324; pl. 52. Type-species: *Paphia paralekta* Horsfield, designated by Scudder, 1875.

Only one species enters the Liberian fauna, but the genus as a whole is distributed throughout the Asiatic and African tropics.

Kallima rumia rumia Westwood

Kallima rumia Westwood, 1850 [1846-1852]: 325; pl. 52, fig. 2 (Ashanti and Gold Coast).

The nominate subspecies is restricted to Occidental Africa. I found it only in the hinterland forests, along trails and in clearings.

Liberia: Ganta, 1 ♂, IX; Wanau Forest, 1 ♂, I, 1 ♂, III, 1 ♂, X; Zorzor, 3 ♂, XI; Yendamalahoun, 1 ♂, 2 ♀, IV (Fox); eastern Liberia, 8 ♂, 2 ♀, III, IV, V (Condamin, 1951).

Genus **HYPOLIMNAS** Hübner

Hypolimnas Hübner, [1819] [1816-1826]: 45. Type-species: *Papilio pipleis* Linné, designated by Scudder, 1875.

=*Salamis* Boisduval, 1833b: 46-47. Type-species: *Salamis augustina* Boisduval, by monotypy.

The only firm distinction between *Hypolimnas* and *Salamis* is the coloring of the palpi: in the former they are black with white spots, in the latter the spots are not present. Only convenience can justify retaining *Salamis* as a genus and it is here treated as a subgenus.

One of the species, *H. misippus,* is nearly universal in distribution, being present in all major faunal regions. The genus centers in the African and Asiatic tropics. A score of species occur in Africa, with seven known from Liberia.

Hypolimnas (Hypolimnas) misippus Linné

Papilio misippus Linné, 1764: 264 ("India").

This butterfly occurs throughout the tropics, subtropics and semitropics everywhere in the world. Males are blue-black with a light patch on the disc of each wing and vary but little. Females are unlike males, are highly variable — suggesting that the gene loci for pattern and color are on the W-chromosome — and are similar in appearance to *Danais* species. Three variants are noted in Occidental Africa: those with the forewing apex tawny, those with the apex blackened and those with a white patch on the hindwing disc. All three have been named, but the names, of course, are synonyms. The species flies in open areas, especially in fields and low secondary growth rather than in the forest.

Liberia: Harbel, 2 ♂, I, 5 ♂, XI; Zorzor, 1 ♀, XI; trail near Fisabu, 1 ♂, XI (Fox); Grand Cess, 1 ♂, 1 ♀, no date (Naysmith); Ziabli, Tchein, 6 ♂, IV (Condamin, 1951); Buttikofer (1890); Sharpe (1906) from Reynolds Collection.

Hypolimnas (Hypolimnas) salmicis (Drury)

Papilio salmacis Drury, 1773 [1770-1782], 2: 14; pl. 8, figs. 1 and 2 (Sierra Leone).

This large, handsome butterfly is found throughout tropical Africa. Males are black with white and blue-white patches and bands. Females are similarly marked but have little or no blue. Unlike *misippus, salmicis* is a forest species and I found it only in the interior.

Liberia: Ganta, 1 ♀, VI, 1 ♀, VII; Wanau Forest, 1 ♂, I, 1 ♀, III, 1 ♀, V, 1 ♀, VIII, 1 ♂, X (Fox); Diyala, 1 specimen, V (Condamin, 1951); Sharpe (1906) from Whicker Collection.

Hypolimnas (Hypolimnas) dinarcha (Hewitson)

Diadema dinarcha Hewitson, 1864 [1852-1876], 3: [32]; pl. [16], fig. 7 (Old Calabar).

This large species is found in the forests of the Guinean Subregion and is less common than the preceding one.

Liberia: Maloubli, 1 specimen, IV (Condamin, 1951).

Hypolimnas (Hypolimnas) dubia dubia (de Bouvier)

Papilio dubius de Bouvier, 1805: 238; pl. 6, figs. 2a and 2b (Africa).
=*Diadema anthedon* Doubleday, 1845: 181 (Central Africa).

The species is distributed throughout tropical Africa, with the nomi-

nate subspecies in the Guinean Subregion and other subspecies in eastern and southern Africa. The sexes are dimorphic and highly variable, subject to a wide range of seasonal and aberrational "forms", often of startling dissimilarity — the literature is littered with synonyms. As *anthedon,* Doubleday described what he justifiably thought was a different species, now known to be one of the variants of the *dubia* populations in which the whitish patch of the hindwing is large and better defined than in "normal" *dubia,* the forewing has a broad white band across the apex, a large white patch at the hind margin instead of a series of spots at the apex and some spots on the disc, with the hindmargin brown-black. In both *"anthedon"* and *"dubia* proper", the white patches and spots may be partly or wholly suffused with ochre brown. No two of the specimens I collected are exactly alike.

Liberia: Harbel, 1 ♂, V, 1 ♂, XI, 1 ♂, XII; Ganta, 1 ♀, IX, 1 ♂, V, 1 ♀, IX; Wanau Forest, 1 ♀, III, 1 ♂, VII, 2 ♂, 1 ♀, X; Zorzor, 3 ♂, 1 ♀, XI; Yendamalahoun, 1 ♂, IV (Fox); Bigtown, 1 ♂; Grand Cess, 3 ♂, 1 ♀ (Naysmith); eastern Liberia, 6 specimens, IV, V (Condamin, 1951); Sharpe (1906) from Whicker material.

Hypolimnas (Salamis) cytora (Doubleday and Hewitson)

Junonia (*Salamis*) *cytora* Doubleday and Hewitson, 1847 [1846-1852]: pl. 25, fig. 5; [1849] p. 211 (Ashanti).

This species is exclusively Occidental and haunts open places in the primitive forest.

Liberia: Wanau Forest, 1 ♂, I, 1 ♂, II, 1 ♂, 1 ♀, III (Fox); Penoke, Maloubli, 2 specimens, IV (Condamin, 1951).

Hypolimnas (Salamis) parrhasius (Drury)

Papilio parrhasius Drury, 1782 [1770-1782], 3: 4-5; pl. 4, figs. 1 and 2 (Sierra Leone). =*Papilio aethiops* de Bouvier, 1805: 22; fig. 3 (Africa).

Aurivillius (1908-1925: 217) treated *parrhasius* as the Occidental and *aethiops* as the Equitorial-East African subspecies. They differ in the black markings on the uppersides, *aethiops* lacking the submarginal line and other marks and giving a much lighter appearance. The long series from many parts of Africa in Carnegie Museum show that both variants occur everywhere and that they are not subspecies,

though the paler form is more frequent toward the east and south. Several specimens collected by Good in Sierra Leone are as pale as or paler than the pale specimens from Nyasaland and other areas in East Africa.

I found *parrhasius* in sunlit places in the primitive forest, often resting on foliage ten to thirty feet above the ground.

Liberia: Ganta, 1 ♂, 1 ♀, V, 3 ♂, 2 ♀, VI, 1 ♂, X; Wanau Forest, 4 ♂, I, 8 ♂, 5 ♀, III, 1 ♂, V, 1 ♀, VI, 3 ♂, 1 ♀, X; Bomi Hills, 1 ♀, IV; Yendamalahoun, 3 ♂, 1 ♀, IV (Fox); eastern Liberia, 4 specimens, IV, V (Condamin, 1951).

Hypolimnas (Salamis) cacta (Fabricius)

Papilio cacta Fabricius, 1793 [1793-1794] (1): 116 (Sierra Leone).

This species is distributed in the forests of most of Africa. I did not happen to find it, but the Dekeyser-Holas Expedition took it in eastern Liberia.

Liberia: Penoke, 1 specimen, IV (Condamin, 1951).

Genus **PRECIS** Hübner

Precis Hübner, [1819] [1816-1826]: 33. Type-species: *Papilio octavia* Cramer, designated by Scudder, 1875.
=*Catacropta* Karsch, 1894: 2. Type-species: *Papilio cloanthe* Cramer, by monotypy.

Catacropta includes a single species of *Precis* having the forewing angled at the tip of M_2 rather than at the tip of M_1, and having the antennal club thickened gradually rather than abruptly. A survey of *Precis* species demonstrates that in both these characters *cloanthe* represents an extreme condition which is nearly approached in other species and that throughout the genus there is a range of variation.

Precis is world-wide in distribution. Nine species are known to occur in Liberia and a tenth will probably be found.

Precis cloanthe ligata Rothschild and Jordan

Catacroptera cloanthe ligata Rothschild and Jordan, 1903: 520 (Sierra Leone).

This is the Occidental subspecies. The species range extends through the Congo into the eastern and southern areas of Africa.

Liberia: Ganta, 1 ♀, II, 1 ♀, VI; Wanau Forest, 1 ♀, III; Zorzor, 2 ♀, IX; Yendamalahoun, 1 ♂, IV (Fox); Cape Palmas, 1 ♂, IX

(Good); no data, 1 ♂ (Naysmith); Pata, 1 specimen, II (Condamin, 1951).

[**Precis chorimene** (Guérin-Méneville)]

Vanessa chorimene Guérin-Méneville, 1844 [1829-1844]: 476 (Senegal).

Distributed from Senegal to Abyssinia and throughout the Congo, this species has not yet been recorded from Liberia. Since specimens are at hand from Sierra Leone, coastal Cameroons and lower Congo, *chorimene* cannot be an exclusively savanna form.

Precis stygia stygia Aurivillius

Precis stygia Aurivillius, 1894: 275 (Cameroons).

The nominate subspecies is found from Sierra Leone (Carnegie Museum) to Angola, throughout the Guinean Subregion, with another subspecies in East Africa. I found it only in the interior of Liberia.

Liberia: Ganta, 2 ♂, 1 ♀, V, 1 ♂, VII, 2 ♀, X; Wanau Forest, 2 ♂, III, 1 ♂, VII, 1 ♂, X; Zorzor, 1 ♀, V; Wozi, 2 ♀, XI; Yendamalahoun, 4 ♂, 3 ♀, IV; eastern Liberia, 8 specimens, III, IV, V (Condamin, 1951).

Precis terea terea (Drury)

Papilio terea Drury, 1773 [1770-1782], 2: 32-33; pl. 18, figs. 3 and 4 (Sierra Leone).

The nominate subspecies occurs throughout the Guinean Subregion, with other subspecies in East and southern Africa. I found *terea* to be rather common in fields, open secondary growth and in forest clearings.

Liberia: Harbel, 2 ♂, I, 2 ♂, 2 ♀, III, 1 ♂, IV, 6 ♂, 3 ♀, XI, 1 ♂, 1 ♀, XII; Gbanga, 1 ♂, V, 3 ♂, X; Ganta, 1 ♀, I, 3 ♂, 1 ♀, II, 3 ♂, 1 ♀, III, 6 ♂, 1 ♀, V, 1 ♂, VI, 6 ♂, VII, 1 ♂, VIII, 1 ♂, IX, 2 ♂, 1 ♀, X, 1 ♂, XI; Wanau Forest, 1 ♂, II, 1 ♂, 1 ♀, III; Zorzor, 1 ♀, XI; Bomi Hills, 2 ♂, IV; Yendamalahoun, 4 ♂, 3 ♀, IV (Fox); Cape Palmas, 1 ♂, IX (Good); no data, 2 ♂ (Naysmith); eastern Liberia, 11 specimens, II to V (Condamin, 1951); Buttikofer (1890).

Precis sinuata Plötz

Precis sinuata Plötz, 1880: 477 (Mungo, Cameroons).

This is one of the species with a tail-like projection on the hindwing. In Liberia I found it in sunny places in the high forest. The species is distributed from Sierra Leone to Uganda.

Liberia: Ganta, 1 ♀, III; Wanau Forest, 1 ♂, I, 1 ♂, X; trail near Fisabu, 1 ♂, XII; Yendamalahoun, 1 ♂, 3 ♀, IV (Fox); eastern Liberia, 4 specimens, II, III (Condamin, 1951).

Precis pelarga (Fabricius)

Papilio pelarga Fabricius, 1775: 513 ("Brasilia").
=*Papilio leodice* Cramer, 1777 [1775-1791], 2: 64; pl. 138, figs. G and H. (Guinea Coast).
=*Papilio harpyia* Fabricius, 1781, 2: 104 (West Africa).
=*Vanessa galami* Boisduval, 1833b: 46 (Senegal).

Distributed from Senegal to Abyssinia and Angola, this species has several variants said to be seasonal (but see discussion in the Introduction). The senior name was given to a "rainy season form" with the apex of the forewing rounded and the discal band crossing the wings yellow with reddish and white shading. The female from Yendamalahoun is an "extreme rainy season form" (collected in April five months after the dry season began) with heavily blackened ground color and flat white transverse band, named *galami* by Boisduval. The names *leodice* and *harpyia* were given to "dry season forms", in which the apex of the forewing is strongly falcate and the hindwing bears a projecting tail at the anal angle; *harpyia* differs in having the light band colored blue instead of orange-white, and is said to be the form resulting from an especially dry season.

Liberia: Harbel, 1 ♂, II, 3 ♂, III; Ganta, 1 ♂, VI, 1 ♂, VII; Wanau Forest, 1 ♂, II; Zorzor, 1 ♂, XI; Yendamalahoun, 1 ♀, IV (Fox); no data, 4 ♂, 1 ♀ (Naysmith); Pata, Webo, 3 specimens, II (Condamin, 1951).

Precis octavia octavia (Cramer)

Papilio octavia Cramer, 1777 [1775-1791], 2: 60; pl. 135, figs. B and C (Sierra Leone).
=*Papilio amestris* Drury, 1782 [1770-1782], 3: 26; pl. 20, figs. 3 and 4 (Sierra Leone).

The nominate subspecies is distributed from Sierra Leone throughout the forests of the Guinean Subregion and is present in Abyssinia.

Another subspecies is found in eastern and southern Africa. The color contrast between the dry and wet season forms is extraordinary. The wet season form (*octavia*) is predominantly orange with black spots and margins, the dry season form (*amestris*) is dark blackish-grey with a red-orange series of spots and some bright blue bands.

Liberia: Ganta, 1 ♂, III (*amestris*) (Fox); Tchein, 2 specimens, IV (*octavia*) (Condamin, 1951).

Precis sophia sophia (Fabricius)

Papilio sophia Fabricius, 1793 [1793-1794], (1): 248 ("India").

This small species exhibits little or no seasonal variation. The nominate subspecies occurs throughout the Guinean Subregion, with other subspecies in East Africa, and is to be found flitting along the edges of secondary growth, in fields, or in large clearings in the primary forest.

Liberia: Harbel, 8 ♂, 2 ♀, I, 6 ♂, 1 ♀, II, 4 ♂, 1 ♀, III, 1 ♂, 3 ♀, IV, 5 ♂, V, 2 ♂, VI, 7 ♂, XI, 4 ♂, 4 ♀, XII; Fish Lake, 1 ♂, XII; Kpain, 2 ♂, 1 ♀, V; Ganta, 2 ♂, V, 1 ♀, VI, 2 ♂, 1 ♀, VII, 1 ♂, IX, 1 ♂, X; Wanau Forest, 2 ♀, II, 1 ♂, X; Zorzor, 2 ♂, 1 ♀, XI; Yendamalahoun, 1 ♂, IV (Fox); eastern Liberia, 27 specimens, II to V (Condamin, 1951); Buttikofer (1890); Sharpe (1906) from Whicker Collection.

Precis clelia clelia (Cramer)

Papilio clelia Cramer, 1775 [1775-1791], 1: 33; pl. 21, figs. E and F (Sierra Leone).

The nominate subspecies occurs everywhere in tropical Africa, with a subspecies on Madagascar, and exhibits little varaition either seasonally or geographically. It haunts sunlit places, especially grassy areas, and sometimes is common.

Liberia: Harbel, 2 ♂, 1 ♀, I, 8 ♂, 3 ♀, II, 6 ♂, 1 ♀, III, 2 ♂, V, 1 ♂, 1 ♀, VII (in 1955 during unusually extended "middle drys"), 1 ♂, X, 2 ♂, XI, 2 ♂, 1 ♀, XII; Ganta, 1 ♂, 1 ♀, II, 2 ♂, 1 ♀, III, 1 ♂, 2 ♀, VI, 3 ♂, 2 ♀, VII, 1 ♂, 1 ♀, X; Wanau Forest, 1 ♂, III (at Wanau town); Zorzor, 1 ♂, 1 ♀, XI (Fox); Cape Palmas, 1 ♂, IX (Good); Bigtown, 1 ♀; Grand Cess, 1 ♂; no data, 2 ♀ (Naysmith); eastern Liberia, 21 specimens, II, III, IV (Condamin, 1951); Buttikofer (1890); Sharpe (1906) from Whicker Collection.

Guinea: Wangazi Range, between Macenta and 'Nzerekore, 1 ♂, 1 ♀, IV (Fox).

Precis orithya madagascarensis (Guenée)

Junonia orithya var. *madagascarensis* Guenée, 1864: 37 (Madagascar).

The nominate subspecies is Asian; *madagascarensis* is found on Madagascar and widely in Africa. Carnegie Museum has a female from Sierra Leone collected by A. I. Good and a male from Liberia, the collector unknown. I did not find it and I suspect that it is a savanna species which occurs in the rain forest belt only as a stray.

Liberia: without locality, date or collector, 1 ♂ (Carnegie Museum via Krautworm Collection).

Genus **VANESSULA** Dewitz

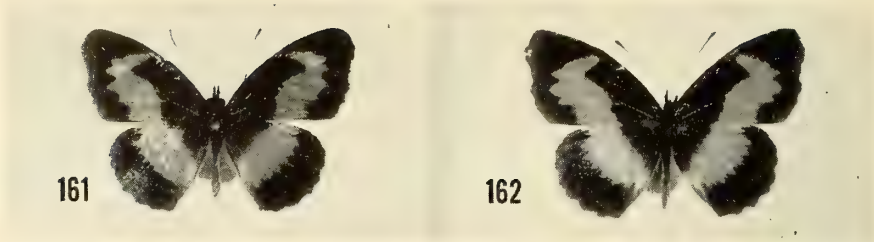
Vanessula Dewitz, 1887: 145. Type-species: *Liptena milca* Hewitson, by monotypy.

Vanessula milca milca (Hewitson) (Fig. 161)

Liptena milca Hewitson, 1873 [1852-1876], 5: [86]; pl. [45], fig. 17 (West Africa).

Hewitson thought this was a lycaenid when he described it, but Karsch (1892) showed that it is a nymphalid and synonymized it with *Vanessula buchneri* Dewitz (1887). Evidently (and naturally) Dewitz did not think to examine Hewitson's illustrations of lycaenids when he found his apparently undescribed species from the Cameroons.

The specimen from Yendamalahoun appears to be the first record of the species in Occidental Africa and it differs in many details from the excellent series in Carnegie Museum from Cameroons, Gabon, Congo and East Africa. Hewitson merely cited "West Africa" as the type locality and mentioned Rogers as the collector of the holotype of *milca*. Elsewhere in Hewitson's "Illustrations", Rogers material is cited from Angola, Gabon and Fernando Po. The true type locality might be any of these places, or it might be some other station. Comparison of Hewitson's figure of the upperside, Karsch's figure and the series in Carnegie Museum reveals the startling fact that Hewitson's type and the male I took in Liberia (fig. 161) are identical, differing from the Cameroons specimens (fig. 162) in the width of the orange band: five millimeters wide at Cu_2 of the forewing in true *milca*, seven millimeters wide in Cameroons material. It would seem that the Rogers specimen described by Hewitson must have been taken



Figs. 161-162. Fig. 161, upperside, *Vanessula milca milca* (Hewitson), male, Yendamalahoun, Liberia. Fig. 162, upperside, *Vanessula milca buchneri* Dewitz, male, Lolodorf, Cameroons. Both natural size.

somewhere on the Guinea Coast in Occidental Africa, rather than in Cameroons, Congo or Angola. The populations in these last areas agree in band width and other features with Karsch's figure and are *V. m. buchneri* Dewitz.

Liberia: Yendamalahoun, 1 ♂, IV (Fox).

Genus **ANTANARTIA** Rothschild and Jordan

Antanartia Rothschild and Jordan, 1903b: 508-509. Type-species: *Papilio delius* Drury, by original designation.

The genus includes half a dozen African species which are closely related to *Hypanartia* of the American tropics. Most of the species are found in East Africa and the islands in the Indian Ocean, but one enters the Liberian fauna.

Antanartia delius delius (Drury)

Papilio delius Drury, 1782 [1770-1782], 3: 18; pl. 14, figs. 5 and 6 (Sierra Leone).

The nominate species occurs from Sierra Leone throughout the forests of the Guinean Subregion, with another subspecies in Uganda. In Liberia I found *delius* only in forests; the males often fly in sunlit glades, while females keep to the shade and the deeper parts of the woods.

Liberia: Ganta, 1 ♂, II, 1 ♂, X; Wanau Forest, 1 ♀, I, 1 ♂, 2 ♀, II, 2 ♂, 3 ♀, III, 2 ♀, V, 1 ♂, 1 ♀, X; trail near Fisabu, 1 ♂, XII; Yendamalahoun, 2♂, IV (Fox); Glofake, Diyala, 2 specimens, III, V (Condamin, 1951); Sharpe (1906) from Reynolds Collection.

Guinea: Wangazi Range, road between Macenta and 'Nzerekore, 1 ♂, IV (Fox).

Tribe ARGYNNINI

World-wide in distribution and centering in the temperate zones, this tribe is represented in Africa by five genera, two of which occur in Liberia.

Genus **LACHNOPTERA** Doubleday

Lachnoptera Doubleday, 1847 [1846-1852]: pl. 22; [1848] pp. 161-162. Type-species: *Papilio iole* Fabricius, by monotypy.

This genus includes only one species and is confined to the Ethiopian Region.

Lachnoptera iole iole (Fabricius)

Papilio iole Fabricius, 1781: 78 (West Africa).

This species is found everywhere in tropical Africa. The nominate subspecies is distributed from Sierra Leone to Kenya. Most females are grey-brown with a row of broad white spots near the margins of the wings, but some are tawny like the males.

Liberia: Harbel, 1 ♀, I, 1 ♀, II, 2 ♂, 2 ♀, III, 1 ♂, 2 ♀, IV, 2 ♀, V, 2 ♂, 1 ♀, VI; Ganta, 2 ♂, 1 ♀, V; Wanau Forest, 2 ♂, 1 ♀, II, 4 ♂, III, 1 ♂, V; Bomi Hills, 1 ♂, 1 ♀, IV (Fox); Grand Cess, 2 ♂, 1 ♀ (Naysmith); Touzon, 1 specimen, IV (Condamin, 1951); Buttikofer (1890).

Genus **PHALANTA** Horsfield

Phalanta Horsfield, 1829 [1828-1829]: pl. 7, fig. 5. Type-species: *Papilio phalanta* Drury, by monotypy.
=*Atella* Doubleday, 1847 [1846-1852]: pl. 22; [1848] p. 165. Type-species: *Atella eurytis* Doubleday, by monotypy.

I have recently (1964) reviewed this genus. *Phalanta* had been rejected because of tautonomy and for many years *Atella* was used, but because tautonomy is now obsolete as grounds for rejecting generic names, the Horsfield name must be restored. There are four species, one of which is Indo-Australian, one African, one Madagascaran and one occurs in all these areas. Both of the species on continental Africa are found in Liberia, one of them being here recorded for the first time from that country.

Phalanta phalanta aetheopica (Rothschild and Jordan)

Atella phalanta aetheopica Rothschild and Jordan, 1903b: 505 (Somaliland).

This subspecies is distributed on Madagascar and throughout tropical Africa. Closely similar to *P. eurytis,* it may be easily distinguished by the presence of a rounded blackened spot in Cu_2-2A of the forewing just distad of the cubital fork; this marking is absent in *eurytis* or is merely a darker tawny, never blackened. Technically, the record below from Cape Palmas is the first for Liberia, but it is quite probable that *aetheopica* has been confused with *eurytis* in the past.

Liberia: Cape Palmas, 2 ♂ (Naysmith).

Phalanta eurytis (Doubleday and Hewitson)

Atella eurytis Doubleday and Hewitson, 1847 [1846-1852]: pl. 22, fig. 3; [1848] p. 167 (West Africa). Gabriel, 1927: 48.
=*Atella columbina*: of authors (not Cramer, 1779).

Cramer's *columbina,* described from China, is a normal aberration of *P. p. phalanta* in the Indo-Australian region and does not occur in Africa (Fox, 1964). It has evidently been ascribed to the latter continent because of the error in identification made by Trimen and Bawker (1887-1889). Although Doubleday cited only "West Africa" as the type locality for *eurytis,* Gabriel (1927) notes that the label on the holotype reads "Sierra Leone". This species is found everywhere in tropical Africa and generally is commoner than *aetheopica.*

Liberia: Harbel, 1 ♀, XII; Wanau Forest, 1 ♂, I, 2 ♂, 1 ♀, II, 5 ♂, 1 ♀, III; trail near Fisabu, 1 ♂, XI; trail from Voinjama to Yendamalahoun, 1 ♂, IV; Yendamalahoun, 1 ♂, IV (Fox); eastern Liberia, 6 specimens, III, IV (Condamin, 1951; as *columbina*); Sharpe (1906) from Reynolds Collection (as *columbina*).

Subfamily Libytheinae

The single, world-wide genus in this group has been assigned to Riodinidae, to Nymphalidae or has been treated as a separate family. Despite its peculiarities — especially the palpi — *Libythea* appears to be a true nymphalid. The well-developed forelegs of females, bearing paired post-tarsal claws, are similar to those of the females of certain primitive Ithomiidae.

Genus **LIBYTHEA** Fabricius

Libythea Fabricius, 1807: 284. Type-species: *Papilio celtis* Fuessl, designated by Latreille, 1810.

Libythea labdaca labdaca Westwood and Hewitson

Libythea labdaca Westwood and Hewitson, 1851 [1846-1852]: 413; pl. 68, fig. 6 (Sierra Leone).

This species is distributed throughout tropical Africa in a series of subspecies. The nominate subspecies occurs in the forests of the Guinean Subregion.

Liberia: Wanau Forest, 1 ♂, X (Fox); Bigtown, 1 ♂, XI (Naysmith); eastern Liberia, 22 specimens, III, IV (Condamin, 1951).

Superfamily Lycaenoidea

by Harry K. Clench

It is and long has been universally agreed that the four families which follow — the Liptenidae, Liphyridae, Lycaenidae and the Riodinidae — are closely allied and form a natural group. There currently exists, however, a considerable diversity of opinion on higher relationships within that group. Stempffer (see especially 1957a) would unite the first three into one family (divided into thirteen subfamilies). Ehrlich (1958) combines all of them into a single family, which he divides into three subfamilies: Styginae (extralimital), Lycaeninae (including the first three families above) and Riodininae.

I have now neither the wish nor the space to compare these classifications with each other, or with the one, quite different from either, employed here, which I first proposed in 1955. Since that time a few minor changes in the latter have become necessary, and are discussed in their proper places below, but other than that it still seems sound enough.

Africa is the continent *par excellence* for the study of the higher classification of these groups. One family (the Liptenidae) is endemic, another (Liphyridae) reaches by far its greatest development and diversity there, and the Lycaenidae (strict sense), though world-

wide in occurrence, are exceptionally richly represented south of the Sahara. Only the Riodinidae are poorly developed.

Prior to 1898 the history of the study of these groups in Africa was primarily one of description, and large numbers of new species were named, keeping pace with the then rapid exploration of the continent. It was also a period of classification by guesswork, and often poor guesswork at that. This changed dramatically in 1898, when Aurivillius published his monumental "Rhopalocera Aethiopica", in which he presented the fruits of extensive, careful morphological study in the form of a sound and analytical classification whose major outlines, and often minor details, are still evident in the arrangement used here. The present classification is really only a refinement of his. Subsequent years have seen, of course, the description of many more new species and genera, but they have also yielded, in the work of men like Lamborn, Farquharson and Jackson, a large amount of information on the early stages — enough, now, that we can begin to use this rich material in classificatory work.

The debt that African lycaenids owe to Monsieur H. Stempffer is a great one indeed. Over the past three decades he has worked painstakingly, thoroughly and carefully, establishing species both old and new on a firm morphological basis, refining and delimiting genera, working out often tangled synonymies —in brief, improving our knowledge of these butterflies in every way at his disposal. I may disagree with M. Stempffer in some questions of higher classification, but I have made use of his labors at every possible opportunity in the account below. Chiefly through his efforts the African lycaenoids are now much better known than those of any other tropical region on earth.

Family Liptenidae

Middle and hind tibiae without spurs; tarsal claw without endodont; male fore tarsus nearly always fused to a single clawless segment, ventrally strongly spinose and always blunt-tipped.

The family is exclusively African. It is divided into four subfamilies, two of which (Durbaniinae and Thestorinae) are extralimital, confined to the southern part of the continent. The other two, the Pentilinae and the Lipteninae, are regional and are characteristic components of the West African rain forest fauna.

Key to the Subfamilies of the Liptenidae

1. Humeral (precostal) vein present on hindwing 2
   Humeral vein absent 3
2. Ventral spines of fused male fore tarsus apically in two similar rows, the number, angle of insertion and spacing of the spines about the same in each row; hindleg with femur shorter than tibia ..... *Pentilinae*
   Ventral spines of fused male fore tarsus apically in two dissimilar rows, a mesad row of erect, rather closely and evenly spaced spines and an exterior row of sparse, declivent, irregularly spaced spines; hindleg with femur subequal to or slightly exceeding tibia .. *Durbaniinae* (extralimital)
3. Male fore tarsus fused to a single segment, with two dissimilar rows of spines (about as in Durbaniinae, above); hindleg with femur shorter than tibia. *Lipteninae*
   Male for tarsus fully formed, similar to that of female; hindleg with femur longer than tibia ..... *Thestorinae* (extralimital)

Subfamily PENTILINAE

Humeral vein present on hindwing; veins of the under surface, particularly on the hindwing, with semi-erect, rather evenly spaced spinules; third (apical) palpal segment globular and small, less than one-third the length of second segment; ventral spines of fused male fore tarsus apically in two similar rows, a diastema (space) present between fourth and fifth spines from tip in each row; macrotrichia as long as or longer than apical spines. Hindleg with femur shorter than tibia.

The male genitalia have developed along peculiar lines. In *Pentila* and *Ornipholidotos* asymmetry is systemic, and both of these, along with *Telipna,* have had the genital structures highly modified. Only *Ptelina* appears to have retained a more conventional configuration of these structures.

The life history is known in some detail for *Telipna* and *Ornipholidotos* (Jackson, 1937: 205 ff.). The larvae feed on lichens on the bark of trees (*Telipna*) or on dead twigs and fallen logs (*Ornipholidotos*), are more or less lymantrioid in appearance and are not attended by ants. That of *Telipna* is sparsely long-haired, "indistinguishable from that of a moth" (Jackson, 1937), while that of *Ornipholidotos* is sparsely spinose. The pupae are spinose and have no girdle, being attached to the substrate by the cremaster alone.

Key to the Liberian Genera of Pentilinae

1. Forewing with vein M_1 arising much nearer to stalked R_{3-5} than to M_2, and may be connate or stalked; hindwing M_1 arises much nearer to Rs than to M_2, and may be connate or stalked 2

Forewing vein M_1 arises well separated from stalked R_{3-5}, much nearer to M_2; hindwing M_1 arises midway between Rs and M_2 or nearer the latter 3

2. Hindwing Rs and M_1 usually separate, Rs slightly sinuate at base (curving first a little costad, then posteriorly); male genitalia highly modified, the vinculum widely expanded laterally, saccus deeply bilobed, the lobes appearing like valvae; falces hardly recognizable as such. Large species, forewing length over 20 mm. ..... *Telipna*

Hindwing Rs and M_1 usually connate or very short-stalked; Rs not curving costad at all; male genitalia of more conventional lycaenoid form, with vinculum not especially enlarged, falces present and of normal form and size, saccus median, single, digitate, directed posteriorly between and below valvae and almost as long as them. Small species, forewing length less than 15 mm. ..... *Ptelina*

3. Uncus of male genitalia triramous; saccus large, with bulbous, inflated tip, directed posteriorly; wings orange, yellow, cream or sometimes white, nearly always with a pattern including many small spots ..... *Pentila*

Uncus of male genitalia biramous; saccus (?) bifurcate, with no such bulbous inflation; wings translucent white with fuscous borders (rarely absent) and very few spots in pattern — rarely more than one at cell-end of either or both wings. ..... *Ornipholidotos*

Genus **TELIPNA** Aurivillius

This difficult genus is badly in need of revision. Upper Guinea apparently has but few representatives, but in the Cameroon-Congo-Uganda region there are many. Jackson (1937) has given information on the early stages of a species in Uganda.

Telipna acraea Doubleday, Westwood and Hewitson

Pentila acraea Doubleday, Westwood and Hewitson, 1852 [1846-1852]; 504; pl. 77, fig. 6. *Liptena acraea:* Grose-Smith and Kirby, 1887 (I) [1887-1902]: 1; figs. 5, 6. *Telipna acraea:* Aurivillius, 1914 [1908-1925]: 301; pl. 61c.

=*Liptena echo* Grose-Smith and Kirby, 1890 (X) [1887-1902]: 40; figs. 5, 6. *Telipna bimacula echo:* Aurivillius, 1914 [1908-1925]: 301; pl. 61d (New synonym).

The two sexes are clearly associated and there is little question of their being the same species. The male agrees perfectly with Grose-Smith and Kirby's description and figures of *echo,* while the females match excellently the figure of *acraea* given by Doubleday, Westwood and Hewitson (upper surfaces only) and by Grose-Smith and Kirby (1887, both surfaces). Females have a peculiarity that I have seen in no other species of this genus, well shown in the cited figures and evident in all the specimens from Liberia: a small fuscous spot in M_3-Cu_1 of the forewing above lies in the middle of the transverse orange band

and almost divides it into a costal part (small) and a posterior part (large).

The species appears to be confined to Upper Guinea.

Liberia, a new record: Ganta, 1 ♀, VI; Wanau Forest, 1 ♂, III, 1 ♀, VIII, 2 ♀, X (all Fox).

Telipna semirufa Grose-Smith and Kirby

Liptena semirufa Grose-Smith and Kirby, 1889 (VIII) [1887-1902]: 33; figs. 5, 6.
Telipna bimacula semirufa: Aurivillius, 1914 [1908-1925]: 301; pl. 61d; Schultze, 1923: 1143.
=*Telipna bimacula:* Stempffer and Bennett, 1956: 503.

This single specimen agrees perfectly with Grose-Smith and Kirby's figure. Aurivillius (1914) gives the range as from the Gold Coast to the Congo, but his figures are not *semirufa* and I am inclined to suspect the "Congo" portion. It is likely that this species is found only in Upper Guinea.

Liberia: Kpain, II (Stempffer and Bennett, 1956); no further data, 1 ♂ (A. C. Good).

PTELINA, new genus

Type-species. — Pentila carnuta Hewitson, 1873.

Head. — Antennae of about 25-28 segments, a few less than in *Telipna;* the last nine segments or so are completely scaleless ventrally and form the swollen and distinct club (in *Telipna* about eleven segments or more are completely bare ventrally and additional ventral scaleless patches are found, one to a segment, for a varying number of segments basad); the longest shaft segment is about 6 to 7 times as long as the middle club segment (1.8 to 2 in *Telipna*). Dorsally on the head the hood of long scales that arches up over the chaetosema is longer than in *Telipna.* Frontal scaling and palpus about as in *Telipna.*

Venation. — Forewing: Sc free, R_1 and R_2 free from cell, the first arising about opposite midpoint between origins of Cu_1 and Cu_2, the second from about opposite Cu_1; R_{3-5} long stalked from, or from just before, upper angle of cell; R_3 branches off first, R_4 ends at apex and R_5 ends on termen; M_1 from upper angle of cell, slightly separate from, or connate with, R_{3-5}; cell-end slightly concave; M_2 arises somewhat nearer M_1 than M_3; M_3 from lower angle of cell, Cu_1 and Cu_2 from well before, widely spaced. Hindwing: precostal vein present, short but distinct; Rs and M_1 connate or very short-stalked (in *Telipna* they are usually slightly separated), Rs proximally evenly arching posteriorly (in *Telipna* it curves first slightly costad, then posteriorly); M_2 arises nearer M_1 than M_3; M_3 from lower angle of cell, Cu_1 and Cu_2 from well before, widely spaced. Veins ventrally, especially on hindwing, with semi-erect spinules as in *Telipna* but smaller, paler and harder to see.

Legs. — Fused male fore tarsus with ventral spines apically in two similar rows, the diastema between fourth and fifth spines from tip (in each row) present but not at all striking. Macrotrichia arising opposite distal end of diastema, somewhat longer than apical spines. Leg segment ratios generally similar to those in *Telipna,* save for these apparently significant differences: the basitarsus, particularly of hindleg, is proportionately longer, about ¾ as long as remainder of tarsus (in *Telipna* barely more than half as long); the hind femur is subequal to or slightly shorter than fore femur, while in *Telipna* it is slightly longer. Hind femur slightly shorter than hind tibia. All femora sulcate ventrally.

Male genitalia (Fig. 163). — Uncus bilobed, broadly and deeply emarginate between the lobes, which are ovoid and setose; falces present, elongate digitate, arcuate; tegumen moderate, simple; vinculum strap-like, somewhat expanded below tegumen, then abruptly narrowed; saccus nearly as long as valvae, slender and digitate, directed posteriorly between and below them; valvae somewhat flask-shaped, proximally broad and ovoid, distally tapering and apically biramous. Penis about as long as valvae, subcylindrical, lightly arcuate and diminishing slightly but regularly in diameter distad; foramen terminal, at proximal end; distal aperture diagonal, vesica with numerous tooth-like cornuti.

Remarks. — Bethune-Baker (1914b: 319; pl. 59, figs. 12, 13) was the first to point out the great difference in male genital structures between *parva* (*carnuta*) and the other species of *Telipna.* He concluded that it should be removed to a genus of its own, but for some reason did not take that step himself.

The male genitalia of *Ptelina* are of the conventional lycaenoid form, with bilobed uncus, falces of normal size and form, paired valvae, distinct saccus. They bear a striking resemblance, in a general way, to the genitalia of *Liptena,* even to the long, posteriorly directed saccus.

In *Telipna* these structures have undergone truly remarkable modification. The genital ring — tegumen and vinculum — is enormously enlarged and dominates the whole structure. It is laterally greatly expanded; dorsally it overhangs the uncus and the falces (which are so modified in configuration as to be hardly recognizable), and ventrally it is formed into a deeply bilobed, greatly expanded, posteriorly directed saccus, in appearance like two large, broad valvae. The true valvae are smaller and lie above these saccus lobes, almost enclosed by them. The penis is similar to that of *Ptelina* but more tapering posteriorly and without cornuti. The eighth sternite is posteriorly modified, bearing on each side a bilobed process, completely absent in *Ptelina.*

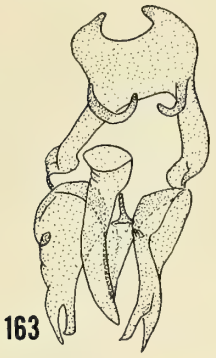


Fig. 163, *Ptelina carnuta parva* Kirby, Liberia, male genitalia.

Ptelina thus appears to be a considerably less specialized genus than *Telipna,* possibly rather close to the ancestral Pentilinae. In this sense it is much as Bethune-Baker (1914) suggested, a link between *Pentila* and *Telipna.*

With the removal of *Telipna rogersi* H. H. Druce to *Pentila* (Stempffer, 1954e: 7-8) there remains, so far as I am aware, only the very curious Nigerian *Telipna actinotina* Lathy (1903: 194; pl. 8, fig. 2) as a probable extraneous element in *Telipna.* Lathy compares it to *carnuta* and mentions that hindwing veins Rs and M_1 are stalked, which does suggest affinity with *Ptelina.*

Ptelina carnuta parva Kirby (Fig. 163)

Liptena parva Kirby, 1887: 362; Grose-Smith and Kirby, 1888 (IV) [1887-1902]: 15, figs. 1-4. *Telipna carnuta parva:* Stempffer and Bennett, 1956: 503.

The species ranges eastward to Uganda, south at least to Gabon. The two subspecies are poorly defined as yet, available material suggesting that nominate *carnuta* occurs only in Gabon, though other authors interpret matters differently.

Liberia: Kpain, II-V; Kitoma, VIII (both Stempffer and Bennett: 1956); no further data, 3 ♂ (A. C. Good); Ganta, 1 ♀, II, 1 ♀, V, 1 ♀, VII; St. Paul River at Zorzor Road, 1 ♂, III; Yendamaiahoun, 1 ♀, IV; (all Fox).

Genus **PENTILA** Westwood

This large and difficult genus has been revised recently by Stempffer and Bennett (1961), who have thereby brought a high degree of

order out of what before was virtual chaos. All determinations in the present paper are based on male genitalia, the only sure method (as these authors point out). Determinations, order of species, and genital terminology here follow this revision, though a few changes in their treatment of species and particularly subspecies are indicated below.

The genus reaches its peak in number of species in the Lower Guinea rain forest, from Nigeria to Gabon and eastward into the Congo. One species extends as far as Natal. In the western end of Upper Guinea — Liberia, Sierra Leone, Republic of Guinea — about seven species are known, distinguished in the following key.

Key to Liberian Species of Pentila

1. Upperside ground color ocher-yellow to orange 2
   Upperside ground white, more or less tinged with yellow, especially in base 6
2. Underside, forewing subterminal spots radially elongate, prominent; ground of both wings with no sprinkling of fuscous scales ..... *p. pauli*
   Underside not so: subterminal spots not discernible or small, never elongate; ground usually with some sprinkling of fuscous scales, particularly on hindwing 3
3. Male genitalia with gnathos very large, three-pronged ..... *condamini*
   Gnathos small, with but one point 4
4. Median process of uncus short, broad, truncate, with three distal points *petreoides*
   Median process of uncus long, slender, digitate 5
5. Process *e* (longer of the two processes nearest and on either side of saccus) about half as long as saccus ..... *petreia*
   This process nearly as long as saccus ..... *preussi*
6. Median process of uncus not surpassing lateral processes, which are well developed, broad and long (*abraxas*) 7
   Lateral processes of uncus reduced to two oval bosses, much surpassed by the elongate subtriangular median process ..... *h. hewitsoni*
7. Forewing above with apical fuscous patch; ground color of wing white, yellow only in extreme base ..... *a. abraxas*
   Forewing above with apical fuscous patch reduced to vein-end spots, fused costad but not in a definite patch; costal and terminal areas of this wing with ground yellow ..... *abraxas phidia*

Pentila pauli pauli Staudinger

Pentila pauli Staudinger, 1888 [1884-1888]: 267; Stempffer, 1950: 402. *Pentila nyassana pauli:* Stempffer and Bennett, 1961: 1127, fig. 27 (including forms *"radiata"* and *"multipunctata"*).

=*Pentila radiata* Lathy, 1903: 195, pl. 8, fig. 3 [form].

=*Pentila multipunctata* Lathy, 1903: 195, pl. 8, fig. 4 [form]. *Pentila pauli multipunctata:* Stempffer and Bennett, 1956: 503.

The polytypic species which Stempffer and Bennett (1961) call *nyassana* Aurivillius, 1898, includes among its subspecies *pauli* Staudinger, 1888, a name which has ten years' priority over *nyassana* and hence must replace it as species name.

The vast range of *Pentila pauli* extends from Senegal (Casamance River) to Ethiopia, south to Angola, the Zambezi River and southern Nyassaland. The area from Sierra Leone to southeastern Nigeria is occupied by the nominate subspecies.

Liberia: Douékè, Fléoulokè-Poutoukè trail, Diakaké-Kaouyéké trail (Stempffer, 1950); Kpain, III, VI, VIII, IX; Bahn, VIII; Dingamo, VIII (all Stempffer and Bennett, 1956).

Pentila condamini Stempffer (Figs. 164, 165, 166)

Pentila condamini Stempffer, 1963a: 954; figs. 1-5.

Nearest to *fidonioides* Schultze (*sensu* Stempffer and Bennett, 1961: 1133; figs. 28-32). The ground color above is the same ochreous orange, but there is less sprinkling of dark scales on the hindwing; the fuscous border is about the same thickness as in thin-bordered *fidonioides* males; on both wings the postmedian spots are absent, the remaining spots smaller, particularly those below the origins of Cu_1 and Cu_2 on forewing. Below, the postmedian spots are absent and the other spots smaller: otherwise as in *fidonioides*. Length of forewing, 17 mm., expanse 33 mm. Male genitalia (fig. 166).

This recently described species was hitherto known only from Senegal (Casamance River).

Liberia: Ganta, 1 ♂, VIII (Fox), male genitalia slide C-863.

Pentila petreoides Bethune-Baker

Pentila petreoides Bethune-Baker, 1915: 187; Stempffer and Bennett, 1961: 1146; figs. 48-50.

The species ranges from Guinea (Macenta and Diorodougo, according to Stempffer and Bennett, 1961; 'Nzerekore, C. M.) to Ghana (Kumasi, type locality).

Liberia: Zorzor, 1 ♂, 1 ♀, V (Fox).

Pentila petreia Hewitson

Pentila petreia Hewitson, 1874: 382. Stempffer and Bennett, 1956: 503; 1961: 1169; figs. 95-97. Stempffer, 1963b: 423.

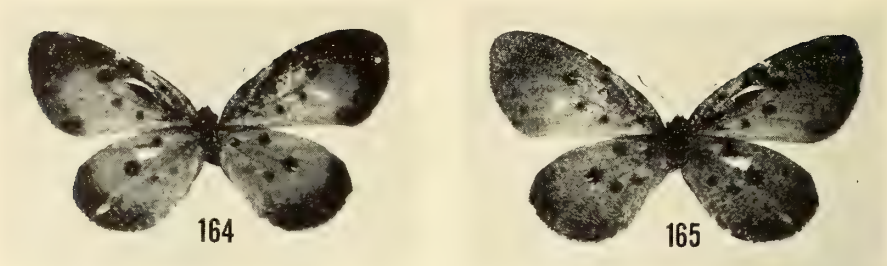


Fig. 164, *Pentila condamini* Stempffer, Ganta Mission, Liberia, male upperside (x 1.4). Fig. 165, same specimen, underside.

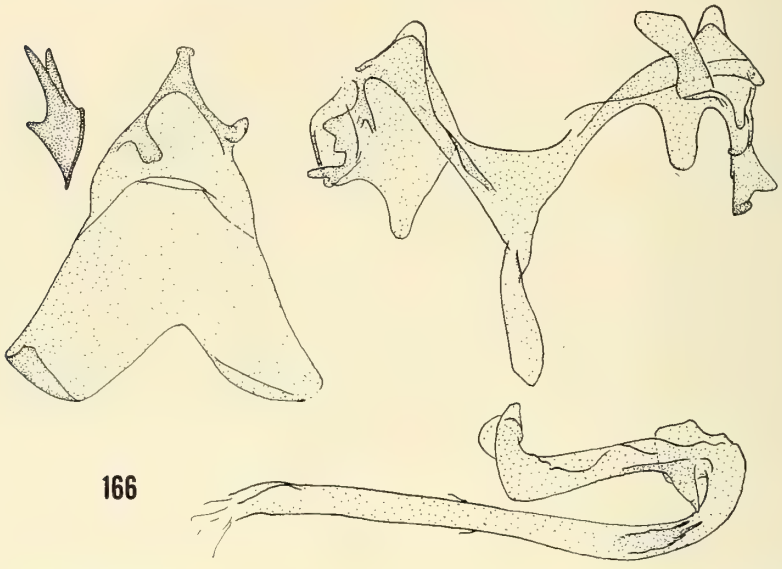


Fig. 166, *Pentila condamini* Stempffer, specimen illustrated in fig. 164, 165, male genitalia (slide C-863).

The species ranges from Liberia to southern Nigeria.

Liberia: Kpain, I-III (Stempffer and Bennett, 1956, 1961); Harbel, 2 ♂, XII (Fox).

[Pentila preussi Staudinger]

Pentila preussi Staudinger, 1888: 267. Stempffer and Bennett, 1961: 1171; fig. 98. Stempffer, 1963b: 424.

No Liberian records are known. The species is recorded (Stempf-

fer and Bennett, 1961; Stempffer, 1963) from Sierra Leone, Guinea and Ivory Coast and in all probability will eventually be found in Liberia.

Pentila abraxas abraxas Doubleday, Westwood and Hewitson

Liptena abraxas Doubleday, Westwood and Hewitson, 1852 [1846-1852]: pl. 77, fig. 5. *Pentila abraxas:* Aurivillius, 1914 [1908-1925]: 309; pl. 61g (poor). *Pentila a. abraxas:* Stempffer and Bennett, 1961: 1180; fig. 109. Stempffer, 1963b: 424.

=*Pentila tripunctata* Aurivillius, 1895b: 197; 1914 [1908-1925]: 309; pl. 61h. Stempffer and Bennett, 1956: 503.

The species ranges in several subspecies from Sierra Leone and Guinea eastward to northeastern Congo and south to Gabon.

It is difficult to understand the distribution of the subspecies of *abraxas.* Two subspecies are relevant here: *a. abraxas* (forewing with three black spots in disc — one in cell, one at cell-end and one below origin of Cu_1; apical patch narrow, ending posteriorly at M_3; base of wing yellow) and *abraxas phidia* Hewitson (forewing also with three black discal spots; apical patch reduced to vein-end spots, confluent costad; costa and termen broadly orange-yellow; see also below).

The range of *a. abraxas* includes (records of Stempffer and Bennett and of Carnegie Museum) Sierra Leone, interior Liberia and adjacent Guinea. The range of *phidia* extends from Ivory Coast eastward to Togo. However, the type of *a. abraxas* is from Ashanti (Ghana), deep in *phidia* territory. Stempffer and Bennett cite *phidia* from Sierra Leone (territory of *a. abraxas*) while forms connecting *a. abraxas* and *abraxas maculata* Kirby (additional spots on forewing; border heavier; ground white, yellow only in base) occur in southern Nigeria, northern Cameroon, etc. In other words, the range of *phidia* intervenes geographically between *a. abraxas* and *abraxas maculata* yet is very different from both and has no part in the clinal variation evident between the two. Despite identity of the male genitalia, I suspect that *phidia* may prove to be a distinct species.

Liberia: Kpain, I, VIII, IX; Kitoma, VIII; Yamein, I (Stempffer and Bennett, 1956); Zorzor Road near Gbanga, V (Fox) (1, sex not determinable, badly worn and broken).

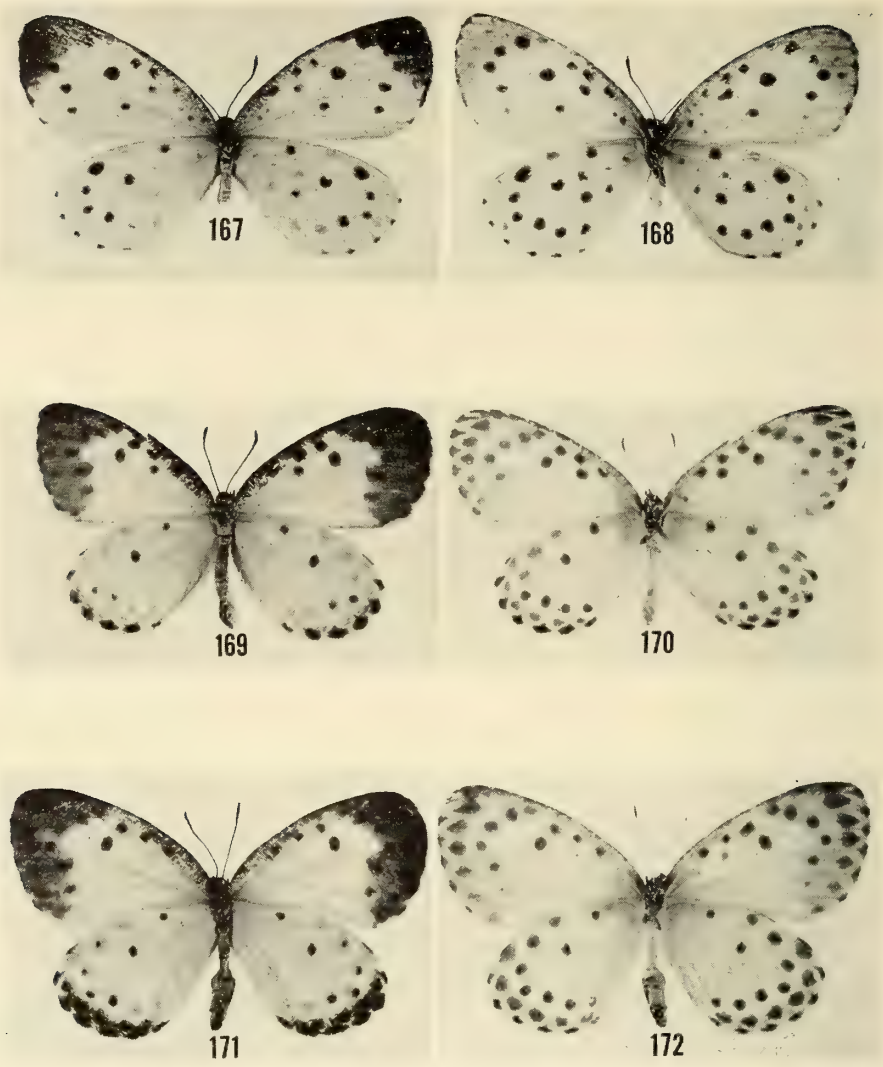


Fig. 167, *Pentila hewitsoni hewitsoni* Smith & Kirby, Wanau Forest, Liberia, male upperside (x 1.4). Fig. 168, same specimen, underside. Fig. 169, *Pentila hewitsoni limbata* Holland, Kangwé, Ogové R., Gabon, male upperside (x 1.3). Fig. 170, same specimen, underside. Fig. 171, *Pentila hewitsoni limbata* Holland, form *"limbata"*, Kangwé, Ogové R., Gabon (holotype of *Teriomima limbata* Holland), female upperside (x 1.3). Fig. 172, same specimen, underside.

[**Pentila abraxas phidia** Hewitson]

Pentila phidia Hewitson, 1874d: 383. *Pentila abraxas phidia:* Stempffer and Bennett, 1961: 1184; fig. 111.

This subspecies (or distinct species), though not yet recorded from Liberia, is to be looked for — particularly in the extreme eastern part of the country.

Pentila hewitsoni hewitsoni Grose-Smith and Kirby
(Figs. 167, 168; compare also 169-172)

Tingra hewitsoni Grose-Smith and Kirby, 1887 (II) [1887-1902]: 3. *Pentila h. hewitsoni:* Stempffer and Bennett, 1961: 1198; fig. 135.
Pentila tropicalis: Hewitson, 1866 [1856-1876] 3: 119; pl. 60, fig. 1. (not *tropicalis* Boisduval, 1847).

P. hewitsoni exists in two known subspecies, the nominate (described from Old Calabar, Nigeria) and *h. limbata* Holland (type locality, Kangwé, Ogové R., Gabon). Stempffer and Bennett (1961) have, I believe, drawn the boundary between them in the wrong place. They associate all Cameroon material, and even some from Gabon, with *h. hewitsoni* and assign the name *limbata* only to material from Gabon. A good series is at hand from Cameroon and three (including the type of *limbata*) from Kangwé, Gabon. All of these are obviously of the same race, quite uniform in general facies (figs. 169, 170). One of the three Gabon specimens and two out of 13 from Cameroon have the hindwing terminal spots enlarged and more or less fused. These authors presume this to be characteristic of *limbata,* whereas it appears to be no more than a minor individual variant (figs. 171, 172). All these specimens, however, have the forewing border heavy, expanded below M_3 and extending beyond vein Cu_2 almost to 2A, while on the underside the subterminal spots are as large as the postmedian — in definite contrast to Hewitson's figure (1866) of typical *hewitsoni,* to Grose-Smith and Kirby's figures of the form *"laura"* (1891 (xv): figs. 1-3), to Nigerian specimens as described by Stempffer and Bennett and to the pair at hand from Liberia (figs. 167, 168) and Guinea. This material shows clearly that nominate *hewitsoni* should be characterized as follows: terminal border of forewing above regularly tapering posteriorly, ending at about M_3 or Cu_1; underside with subterminal spots minute in comparison with postmedian, usually absent below M_3 of forewing and only infrequently

present on hindwing. By this characterization, the ranges of the two subspecies may be described as follows: ssp. *hewitsoni:* Liberia and Guinea eastward to Nigeria (figs. 167, 168); ssp. *limbata:* southern Cameroon and Gabon (figs. 169, 170; and form *"limbata"*, 171, 172).

Material from northern Cameroon and Congo (*cf.* Stempffer and Bennett) should be re-examined from this point of view.

The name *laura* Grose-Smith and Kirby, as Stempffer and Bennett note, appears to refer to a minor and apparently uncommon individual variant. The 'Nzerekore female recorded below matches the figure quite closely. The name is not worthy of retention.

Liberia: Wanau Forest, 1 ♂, X (Fox).

A female is in Carnegie Museum from 'Nzerekore, Guinea, 19-VI-1950 (*ex coll.* J. Grom). These two specimens make a notable westward extension in the known range of the species, hitherto recorded from no farther west than Lagos, Nigeria.

Genus **ORNIPHOLIDOTOS** Bethune-Baker

The genus is similar in venation to *Pentila* and until recently (especially Stempffer, 1947) was considered congeneric. In addition to the different facies, however, it shows such striking and extensive differences in male genital structure that the homologies of the various component structures are still not determinable.

Only one species is known to occur in Liberia. In Cameroon, Congo and Uganda the genus is well developed. Jackson (1937: 206, as *Pentila*) has described the early stages of a Ugandan species.

Ornipholidotos kirbyi Aurivillius?

Pentila kirbyi Aurivillius, 1895b: 198. *Ornipholidotos kirbyi:* Stempffer, 1947: 167; figs. 1A, 2; Stempffer and Bennett, 1956: 503.

The following records, based on three females, are the first of this genus to be published from west of Nigeria. In view of the fact that positive identification in *Ornipholidotos* depends heavily on the structures of the male genitalia the above determination should be considered tentative.

Liberia: Kpain, I; Sopia, II (both Stempffer and Bennett, 1956).

Subfamily LIPTENINAE

Humeral vein absent on hindwing; veins of under surface without erect spinules; third (apical) palpal segment slender, digitiform, about half as long as second; ventral spines of fused male fore tarsus apically in two dissimilar rows: an inner (mesad) row of erect, closely and rather evenly spaced spinules lacking a diastema or space between fourth and fifth from tip; and an outer row of sparse, declivent and irregularly spaced spines; macrotrichia of fused male fore tarsus shorter than terminal ventral spine. Hindleg with femur shorter than tibia.

The male genitalia have remained generally rather primitive, particularly those of some *Liptena.* In others, such as *Mimacraea, Pseuderesia, Baliochila,* they have undergone some specialization, but it involves chiefly configurational differences in the uncus and penis, loss or configurational modification of falces. Asymmetry is slightly developed in *Mimacraea* and *Mimeresia* and to an even lesser extent in some others. Nowhere do such extraordinary modifications occur as are found in many Pentilinae.

Life history information on many of the genera can be found in Farquharson *et al.* (1922) and Jackson (1937). The known larvae are all lymantrioid in form and feed on lichens, occasionally on moss, on the trunks of trees. The pupa lacks a girdle and is attached to the substrate by the cremaster alone. Larvae of most genera are not associated with ants but Jackson (1937) reports an obligatory ant association in a species of *Liptena.*

Key to the Tribes of Lipteninae

1. Forewing R_{3-5} arises distinctly before upper angle of cell, well separated from origin of M_1; male with coremata (eversible ventral sacs bearing long modified scales, the sacs just anterior to genital capsule) ..... Epitolini
   R_{3-5} arises from upper angle of cell, close to or connate with (occasionally long stalked with) M_1 2
2. Male with coremata (as above) ..... Iridanini
   No coremata ..... Liptenini

Tribe LIPTENINI

In addition to the key characters this tribe usually has an uncus more or less bifid, occasionally deeply so; falces often absent or much modified. The coremata of male Epitolini and Iridanini are absent. Most of the species are rather fragile in structure and lean strongly to red (or orange) and black, or to white and black coloration.

Though primarily denizens of the western rain forest, a number of genera have become developed in eastern Africa (*Baliochila* (though with a single Liberian species, discussed below), *Teriomina, Cnodontes*). The large genus *Mimacraea* has succeeded in occupying both areas, with a sizable percentage of the species occurring in each, though it is everywhere rare.

Mimicry plays a major role throughout this group. Species of *Mimacraea,* as its name suggests, are nearly all mimics of acraeine (or danaine) species, and a complex mimetic assemblage (see van Someren and Jackson, 1960) includes many *Mimeresia, Pseuderesia, Eresina* and *Liptena.* Only in recent years has Stempffer (especially 1954) unravelled this tangle, the mimicry being sufficiently close to have fooled several generations of lepidopterists.

The tribe divides into three sections, chiefly on the basis of male genital structures. Study of these genera has been rather superficial and I do not wish to present this arrangement in any sort of a formal way until more extensive and intensive investigations can be brought to bear.

Section I (Lycaenidae, Mimacraeinae of Stempffer). — Falces absent; tegumen extremely reduced, no larger than the narrow, strap-like vinculum; uncus very deeply bifid: in *Mimacraea* and *Mimeresia* composed of two large, round, rather asymmetrically formed lobes, each with a long, digitate distal process mesially. The large lobes are absent in *Pseuderesia* but the long processes remain. Valvae with a falcate apical process. Penis doubly bent, Z-shaped. Saccus virtually absent.

Only three genera are included — *Mimacraea, Mimeresia, Pseuderesia* (*sensu stricto*).

Section II. — Falces usually absent, but present and mostly much modified in *Baliochila* and *Cnodontes*; tegumen ample; vinculum also rather broad, at least dorsally; uncus nearly always bifid, sometimes with supplementary lateral processes, occasionally nearly entire (as in *Baliochila nyasae* Stempffer and Bennett, *B. woodi* Riley); valvae frequently (as in *Baliochila*) with a falcate process, more often with the valva rather differently and variably formed (as in *Teriomima,* which has a supplementary process, and others). Saccus virtually absent. Penis nearly always strongly and abruptly bent twice, to produce a nearly Z-shaped configuration in lateral view. This is the largest

section of the tribe in number of genera, many of which are essentially East African.

Included genera (based only on those examined) — *Citrinophila* Kirby, *Baliochila* Stempffer and Bennett, *Eresina* Aurivillius, *Eresiomera* new genus, *Argyrocheila* Staudinger, *Cnodontes* Stempffer and Bennett (extralimital), *Teriomina* Kirby (extralimital).

Section III. — Falces nearly always present (though completely absent, along with the uncus, in the *ideoides* group of *Liptena*); penis of more conventional form, straight to arcuate, usually tapering to a distal point; tegumen slight to moderate; uncus usually well developed (but see just above), shallowly bifid; valvae quite variable in configuration and usually a sensitive indicator of species difference; saccus moderate to well developed.

Included genera (those examined only) — *Liptena* Westwood (including subgenus *Tetrarhanis* Karsch); *Larinopoda* Butler, *Micropentila* Aurivillius.

Genus **MIMACRAEA** Butler

Most of the species of this still poorly understood genus are found in Cameroon, Congo and Uganda, where they are quite rare. Schultze (1923) has provided interesting information on adult habits and Jackson (1937) has described in some detail the immature stages of a species occurring in Uganda. The larva is lymantrioid in form and feeds on lichens and moss on the trunks of trees.

Mimacraea neurata neurata Holland (Figs. 173, 174)

Mimacraea neurata Holland, 1895: 166. Aurivillius, 1898: 266. 1918 [1908-1925]: 315. Peters, 1952: 94.
=*Mimacraea fulvaria:* Eltringham, 1910: 46; pl. 3, figs. 18, 20.
=*Mimacraea fulvaria alciopina* Joicey and Talbot, 1924: 38. Stempffer and Bennett, 1956: 503 (New Synonym).

The name *alciopina* was given by Joicey and Talbot to the Upper Guinea subspecies of the species they knew as *fulvaria* Aurivillius (1895a, 381, compare also 1898, pl. 6, fig. 6), in ignorance of the identity of Holland's *neurata*. The type of the last name (figs. 173, 174) agrees closely with Eltringham's figure (1910, fig. 18) of a male from Sierra Leone and unquestionably is the same. The name *alciopina* must therefore fall.

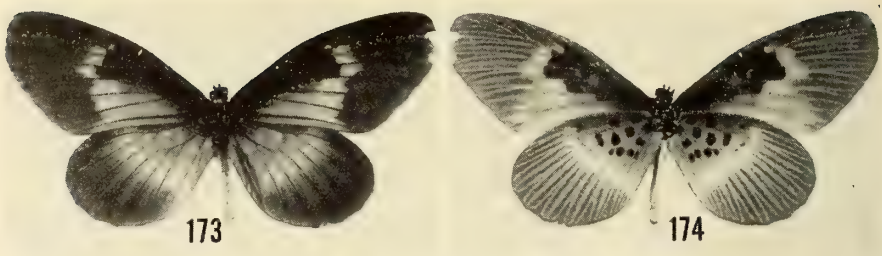


Fig. 173, *Mimacraea neurata neurata* Holland, Liberia, male holotype, upperside (x 0.97). Fig. 174, same specimen, underside.

Nominate *neurata* is known from Sierra Leone to Ghana while the subspecies *fulvaria* Aurivillius occurs in the northern Congo. Bethune-Baker (1914b: pl. 63, fig. 44) has figured the male genitalia of this species under the name *fulvaria.*

Liberia: Kpain, III, Wanau, IV (Stempffer and Bennett, *l.c.*); no further data (Good, type ♂ of *neurata*).

Mimacraea darwinia darwinia Butler (Figs. 175-178, compare also 179-182)

Mimacraea darwinia Butler, 1872 [1869-1874]: 104; pl. 38, fig. 8. Aurivillius, 1898: 266. 1918 [1908-1925]: 315.

=*Mimacraea darwinia apicalis:* Stempffer and Bennett, 1956: 503 (not *apicalis* Grose-Smith and Kirby).

The true *darwinia* of Butler has been something of an enigma. It was originally described from a specimen of unknown source and further material was not found for a long time (see among others, Eltringham, 1910, p. 80). However, the "variety" (*recte* subspecies) *apicalis* Grose-Smith and Kirby (1890 (X) [1887-1902]: 41; figs. 6, 7) described from Cameroon, has been obtained by many collectors and is relatively well known.

The three Liberian specimens (see figs. 175-178) listed below match Butler's figure well and agree in possession of a trait which Grose-Smith and Kirby indicate as distinguishing *darwinia* from their *apicalis:* the subapical patch of the forewing above is orange, like the posterior, larger patch on the same wing, not contrastingly paler as in *apicalis.* There are other differences as well (comparisons with a series of *apicalis* [see figs. 179-182] from Cameroon and Gabon): the ground color above is ruddier orange than in *apicalis,* especially in the

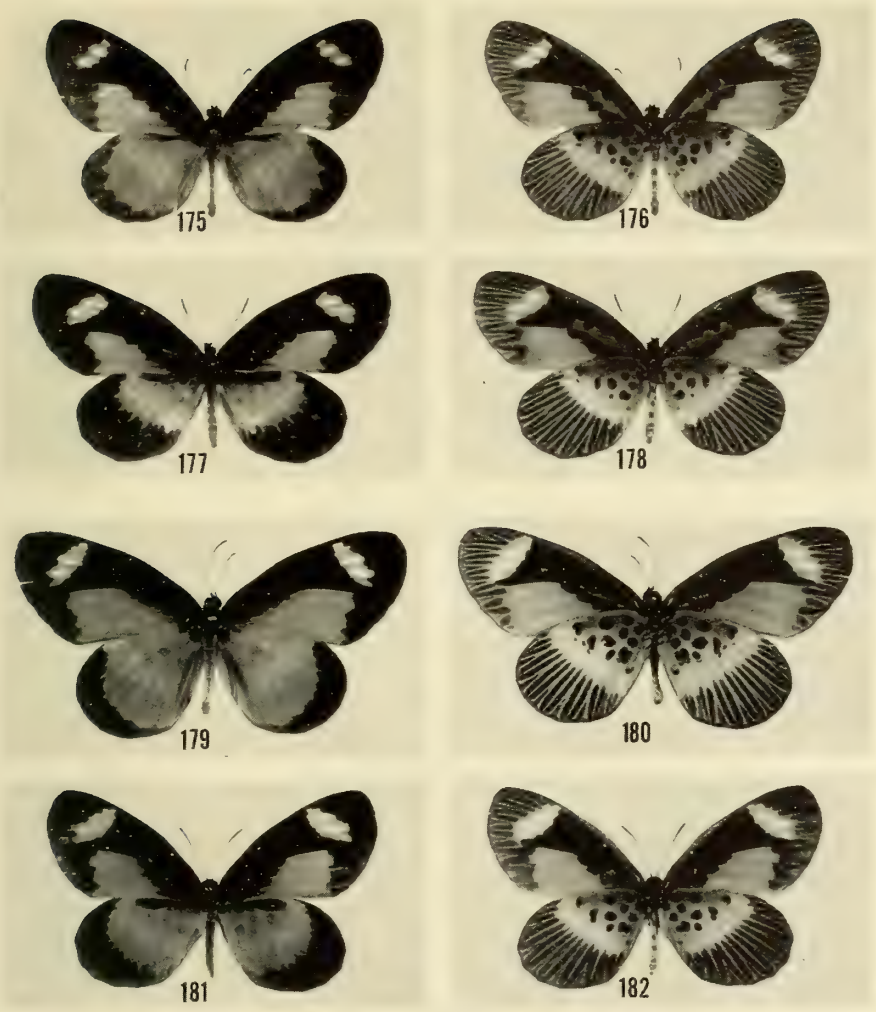


Fig. 175, *Mimacraea darwinia darwinia* Butler, Yendamalahoun, Liberia, male upperside (x 0.8). Fig. 176, same specimen, underside. Fig. 177, the same, Ganta, Liberia, female upperside. Fig. 178, same specimen, underside. Fig. 179, *Mimacraea darwinia apicalis* Smith & Kirby, Kangwé, Ogové R., Gabon, male upperside (x 0.8). Fig. 180, same specimen, underside. Fig. 181, the same, same locality, female upperside (x 0.8). Fig. 182, same specimen, underside.

male; the fuscous above is more extensive on both wings above, resulting in a narrower posterior orange patch on forewing and thicker terminal fuscous border on hindwing. The sexes of *darwinia* resemble one another more closely than is true of *apicalis*, due chiefly to the fact

that the *apicalis* male has departed markedly from the general pattern schema of the species as a whole, its ground color being lighter and more extensive.

It seems quite probable that these Liberian specimens represent the hitherto poorly known *darwinia* (*sensu stricto*) of Butler. Quite possibly his specimen came from Sierra Leone, the source of so much early Occidental African material.

The nominate subspecies occurs in Upper Guinea, though its limits are still unknown. Subspecies *apicalis* occurs in Cameroon and Gabon. The male genitalia of the latter have been figured by Stempffer (1944: 525, fig. 6).

Liberia: Kpain, II (Stempffer and Bennett, 1956); Wanau Forest, 1 ♂, II; Ganta, 1 ♀, VI; Yendamalahoun, 1 ♂, IV (all Fox).

Genus **MIMERESIA** Stempffer

Stempffer (1961a) has recently revised this genus. Of the fourteen species now known four are to be expected in Liberia, but only one has turned up so far.

[**Mimeresia semirufa** Grose-Smith]

Pseuderesia semirufa Grose-Smith, 1902 (XXX) [1887-1902]: 146, figs. 14, 15. Aurivillius, 1918: 325. *Mimeresia semirufa:* Stempffer, 1961a: 29, pl. 2, figs. 15, 16.

Known from Sierra Leone and Ghana and hence probably occurring in Liberia.

[**Mimeresia debora catori** Bethune-Baker]

Pseuderesia catori Bethune-Baker, 1904: 225. Aurivillius, 1918 [1908-1925]: 321. *Mimeresia debora catori:* Stempffer, 1961a: 28, pl. 2, figs. 3, 4.

The subspecies *catori* is known from Sierra Leone and Ghana and probably occurs also in Liberia. Other subspecies are known from Cameroon, Gabon and former French Congo (nominate *debora* Kirby), former French Congo and western Congo (*deborula* Auriv.), eastern Congo, Uganda and Tanganyika (*barnsi* Hawker-Smith).

Mimeresia libentina isabellae Schultze

Pseuderesia libentina var. *isabellae* Schultze, 1916: 36 (Fernando Po); 1923: 1166. *Mimeresia libentina* form *isabellae:* Stempffer, 1961a: 26.

=*Mimeresia libentina:* Stempffer, 1952a: 184 (Togo).
=*Mimeresia libentina zerita:* Stempffer and Bennett, 1956: 503.

This subspecies ranges from Liberia to Nigeria and adjacent parts of Cameroon as well as the island of Fernando Po. Nominate *libentina* occurs commonly in southern Cameroon and a single female is at hand from Gabon.

Liberia: Kpain, II-IV, VI, IX; Saniquellie, V (Stempffer and Bennett, 1956); Ganta, 2 ♂, II, 1 ♂, V; Wanau Forest, 1 ♂, III (Fox).

[**Mimeresia moyambina** Bethune-Baker]

Pseuderesia moyambina Bethune-Baker, 1904: 224; Aurivillius, 1918 [1908-1925]: 320. *Mimeresia moyambina:* Stempffer, 1961a: 41; pl. 2, figs. 17, 18.

Only the holotype from Sierra Leone is known. The species may possibly be found in Liberia.

Genus **PSEUDERESIA** Butler

Pseuderesia Butler, 1874b: 532. Type-species: *Pseuderesia catharina* Butler, 1874 (=*P. eleaza catharina*).

Stempffer (1961: 12) has reviewed this genus recently and removed many of the extraneous elements formerly included in it. There remains in the genus, as he restricts it, one species which I feel should be removed also. Unfortunately, it is the type of the genus and takes its generic name with it! The bulk of the species Stempffer included in *Pseuderesia* must therefore be given a new generic name (*Eresiomera,* see below). The genus *Pseuderesia* is thus limited here to the single species *eleaza* Hewitson. Significant differences separating *Pseuderesia* and *Eresiomera,* discussed more fully below in the description of the latter, are found in wing shape, pattern of both sexes and in the male genitalia. *Pseuderesia* itself is actually more closely related to *Mimeresia* than to *Eresiomera.*

Pseuderesia eleaza nigra Cator

Pseuderesia nigra Cator, 1904: 74. *Pseuderesia eleaza nigra:* Stempffer and Bennett, 1956: 503. Stempffer, 1961: 14.

The subspecies *nigra* occurs in Sierra Leone and Liberia. Farther east a succession of subspecies is found as far as Cameroon and

Uganda. The species appears to be nowhere very common.

Liberia: Kpain, XII (Stempffer and Bennett, 1956).

Genus **CITRINOPHILA** Kirby

Peters (1952: 95) has synonymized *serena* Kirby, *similis* Kirby and *pusio* Smith all to *tenera* Kirby, though on what grounds I do not know. Poulton (*in* Farquharson *et al.*, 1922: 465-466) would make *limbata* Kirby, *marginalis* Kirby and *similis* Kirby all synonyms of *tenera*. Available material is limited but genitalic dissections show that some, at least, of these names are certainly valid. The genus, as shown by genital structure, is closely allied to *Teriomima* Kirby (compare Stempffer and Bennett, 1953). Some data on the life history of a species in this genus are given in Farquharson *et al.* (1922). The larva is lymantrioid and a bark feeder.

Citrinophila tenera Kirby (Fig. 183)

Teriomina tenera Kirby, 1887: 365 (Gabon); Grose-Smith and Kirby, 1888 (III) [1887-1902]: 11, figs. 3, 4.

Females from Cameroon are usually without the cell-end dot of the forewing below, usually present in Gabon females. The single Liberian male has this dot much smaller than in males from either Cameroon or Gabon. In addition its black borders above are somewhat narrower. The male genitalia, hitherto unfigured, are shown in fig. 183.

The recorded specimen represents a significant extension of the known range, for the species previously has been known only from Gabon, Cameroon and Nigeria.

Liberia: Harbel, 1 ♂, I (Fox).

Citrinophila species

Both of the specimens recorded are in very poor condition, so much so that only the female can be sexed with assurance. The wing pattern cannot be matched with any described form but in the absence of more adequate material, particularly the male genital structures, bestowal of a name would be most unwise.

The male (?) has the terminal black border of the forewing above as thick as in *tenera,* but without the teeth projecting inward on veins Cu_1 and Cu_2; costally this border broadens to cover the distal half of the costa, but does not extend along costa to base at all, the basal half of the costa being golden yellow with only a slight sprinkling of

Fig. 183, *Citrinophila tenera* Kirby, Harbel, Liberia, male genitalia (slide C-913).

black scales. The terminal border of the hindwing is similar to that in *tenera*, but only about two-thirds as thick.

The female (sexed by examination of forelegs) is similar to the male save only that the terminal border on the forewing above is not thickened as much costally and occupies therefore only the distal third of the costa, and that of hindwing tapers costad somewhat more gradually.

Below both sexes lack cell-end dots on both wings; the termen of forewing is linearly edged with black; on hindwing a terminal series of vein-end bars, thin and almost linear.

The upper surface of the presumed male is very similar to the figure of *similis* Kirby (Grose-Smith and Kirby, 1888 (III) [1887-1902]: fig. 1), but the under surface of that species is described and figured as having a cell-end dot on both fore- and hindwing below.

Liberia: Ganta, 1 ♀, V, 1 ♂ (?) VI (Fox).

Citrinophila marginalis Kirby

Teriomima marginalis Kirby, 1887: 368. *Citrinophila marginalis:* Stempffer and Bennett, 1956: 503. Stempffer, 1957a: 55.

Stempffer (1957a) gives the known distribution as extending eastward to Cameroon.

Liberia: Kpain, I-III (Stempffer and Bennett, 1956).

Genus **BALIOCHILA** Stempffer and Bennett

At the time of its description and revision by Stempffer and Bennett (1953: 85 *ff.*) this genus included twelve species, all occurring exclusively in eastern and southern Africa. The subsequent discovery of a species in Liberia is astonishing and wholly unexpected.

Baliochila petersi Stempffer and Bennett

Baliochila petersi Stempffer and Bennett, 1956: 503, figs. 1, 2.

The species would appear to be about as close to *minima* Hawker-Smith as to any in the genus, but is very distinct.

Liberia: Kpain, III (Stempffer and Bennett, 1956), a unique male.

Genus **ERESINA** Aurivillius

No Liberian specimens are known of this genus, revised rather recently by Stempffer (1956: 9; 1961: 45). His locality records, however, suggest that several species are to be looked for, and these are listed below. Those marked "*" have been taken both east and west of Liberia; those marked "?" are known from nearby, either east or west but not both. For discrimination of these species, see Stempffer's papers.

? *Eresina maesseni* Stempffer, 1956 (Togo).
? *Eresina saundersi* Stempffer, 1956 (Ghana to Nigeria).
* *Eresina rougeoti* Stempffer, 1956 (Sierra Leone to Gabon to Uganda).
* *Eresina theodori* Stempffer, 1956 (Sierra Leone to Nigeria).
? *Eresina fusca* Cator, 1904 (Sierra Leone).
? *Eresina pseudofusca* Stempffer, 1961 (Ghana to Nigeria).
* *Eresina jacksoni* Stempffer, 1961 (Uganda; Sierra Leone).

ERESIOMERA, new genus

Type-species. — *Liptena isca* Hewitson 1873.

In antennae, palpi, venation and legs apparently not differing from *Pseuderesia*. The chief differences between the two are:

(1) Wing shape. In the present genus the wings are short and rounded, the forewing with costa strongly convex, apex blunt. The length of forewing is barely 1.5 times its greatest width (perpendicular to costa, through tornus), and about 1.2 times that of hindwing (base to end of M_3). In *Pseuderesia* both wings are elongated, the

hindwing slightly, the forewing strongly, its costa nearly straight, apex rounded but much produced. The length of forewing is about twice its greatest width and about 1.5 times as long as hindwing. In these traits it resembles *Mimeresia,* but is even more extreme.

(2) Pattern. The under surface pattern of *Eresiomera* is strikingly different from that of *Pseuderesia,* while the latter is so similar to the pattern of *Mimeresia* that from the undersurfaces alone one would unhesitatingly lump *Pseuderesia* and *Mimeresia,* leaving *Eresiomera* widely removed from both. Like that of most *Mimeresia* the underside pattern of *Pseuderesia* consists on the hindwing of a silvery gray ground color with a postmedian band of quadrate patches of bright red, each edged basally by a black line; in the basal area are five or six round black spots ringed with gray, with irregular patches of bright red between. In *Eresiomera* the whole hindwing below is dark brown with a leaden or dully iridescent sheen over most of it, crossed by a postmedian row of red dots and with additional small red spots in the base. There is no gray ground color, no black edging to the postmedian spots, no basal black dots, and the postmedian line is shifted considerably basad, to lie very near the middle of the wing. On the forewing *Pseuderesia,* like *Mimeresia,* has a prominent subapical orange band; discal orange in the male is reduced to a mere trace below Cu_2. In *Eresiomera* there is no subapical patch of orange and the discal orange is prominent, subtriangular, and often produced as a slender line nearly or completely to costa. Females above show additional differences. In *Eresiomera* the discal fulvous of forewing is produced to costa just beyond cell-end, in a characteristic manner; in *Pseuderesia,* as in nearly all *Mimeresia,* this is not so and the costa remains uninterruptedly and usually rather broadly fuscous. On the hindwing the costa of *Eresiomera* is orange like the disk; in *Pseuderesia,* as in many *Mimeresia,* the hindwing costa is broadly fuscous. Pattern, of course, is variable, particularly in large genera like *Mimeresia* and *Eresiomera,* and in each of these exceptions to certain of the above statements can be found. The above comparisons are intended to describe trends rather than universals.

(3) Male genitalia. (See Stempffer, 1954f: fig. 1, *Pseuderesia eleaza*; fig. 3, *Eresiomera isca*; fig. 5, *Mimeresia libentina.* The same author shows in a later paper (1961) genitalia of many other *Eresiomera* and *Mimeresia.*) In *Eresiomera* the tegumen is broad, entire,

the uncus lobes relatively short and the vinculum rather broadly strap-like, tapering in width from the tegumen down. In *Pseuderesia* the tegumen is either virtually absent or so deeply bifid and its parts so closely joined to the uncus lobes as to be indiscernible. The latter are long, slender, lamellar, and arise apparently directly from the very slender vinculum, which is equally slender throughout. *Mimeresia* is quite similar to *Pseuderesia* save that the uncus lobes are strongly expanded laterally in their proximal halves.

In resumé, in each of three areas of difference — wing shape, pattern, genitalia — *Eresiomera* reveals marked differentiation from *Pseuderesia,* and the latter appears to belong very near *Mimeresia.*

In *Eresiomera* will fall all those species treated by Stempffer (1961: 12) under *Pseuderesia,* except *eleaza.*

Eresiomera isca Hewitson

Liptena isca Hewitson 1873 [1856-1876], 5: [86], pl. [45], figs. 14-16. *Pseuderesia isca:* Stempffer, 1961: 15.

The species ranges from Guinea and Liberia to Gabon and the eastern Congo.

Liberia: no further data 9 ♀ (Good): Harbel, 1 ♂, V, 1 ♀, VI, 1 ♂, VII; Ganta, 1 ♂, VI (Fox).

[Eresiomera bicolor Grose-Smith and Kirby]

Pseuderesia bicolor Grose-Smith and Kirby, 1890 (XI) [1887-1902]: 44; figs. 5, 6. Stempffer, 1961: 16.

Known from Nigeria, Ghana and Ivory Coast, it is quite possible that this species eventually will be found in Liberia.

Eresiomera osheba Holland

D'Urbania osheba Holland, 1890a: 428. *Pseuderesia osheba:* Stempffer, 1961: 17.

A single male from Liberia with no further data (Good), determined genitalically, considerably extends the known range of this species, which was previously recorded only from Cameroon, Gabon and Middle Congo.

Genus **ARGYROCHEILA** Staudinger

A small genus of small, delicate, mostly white liptenids of bizarre wing shape, generally rare. No species has yet been found in Liberia but *A. undifera* (Staudinger, 1892a: 215) is known from Sierra Leone (Bethune-Baker, 1904: 223), Ghana (Dudgeon, 1909 lii), Cameroon (C.M.; Schultze, 1923: 1191), Congo (Schultze), and Gabon (Staudinger, 1892). There is a subspecies, *ugandae* Hawker-Smith (1933: 10), in Uganda and the species is apparently commoner there than to the west.

Genus **MICROPENTILA** Aurivillius

This genus, several members of which are quite common, others very rare, seems to have its center of distribution in Cameroon. Two species are known to occur in Liberia and two others are likely to be found eventually.

Micropentila adelgunda Staudinger

Teriomima adelgunda Staudinger, 1892a: 219. *Micropentila adelgunda:* Stempffer and Bennett, 1956: 507.

The species ranges from Sierra Leone to Nigeria and south to Gabon.

Liberia: Kpain, II (Stempffer and Bennett, 1956).

[**Micropentila dorothea** Bethune-Baker]

Micropentila dorothea Bethune-Baker, 1903: 327.

This species is known to occur in Sierra Leone, but has not as yet been taken in Liberia.

Micropentila adelgitha Hewitson

Liptena adelgitha Hewitson, 1874b: 36. *Micropentila adelgitha:* Stempffer and Bennett, 1956: 507.

The species ranges from Liberia to Uganda, south to Gabon.

Liberia: Kpain, III (Stempffer and Bennett, 1956).

[**Micropentila mabangi** Bethune-Baker]

Micropentila mabangi Bethune-Baker, 1904: 226.

This species is still known only from Sierra Leone. It may possibly occur in Liberia, but no specimens have so far been taken.

Genus **LARINOPODA** Butler

This genus of slow-flying, pierid-like liptenids is most numerously represented in Cameroon; in western Upper Guinea only a single species is known and one other is of possible occurrence. The genus was reviewed by Eltringham (1922).

[Larinopoda aspidos H. H. Druce]

Larinopoda aspidos H. H. Druce, 1890: 25. Eltringham, 1922: 262; pl. 10, figs. 7, 8, pl. 11, fig. 4. Stempffer, 1952a: 185 (Togo).

This species occurs rather commonly from Togo to Nigeria. It has not as yet been taken in Liberia but may possibly occur there.

Larinopoda eurema Plötz

Phytala eurema Plötz, 1880: 199.
Larinopoda eurema: Eltringham, 1922: 261; pl. 10, fig. 10, pl. 11, fig. 5. Stempffer, 1950: 402; 1952c: 145; 1954c: 347. Stempffer and Bennett, 1956: 506.

The species ranges from Sierra Leone and Guinea eastward at least to Ghana. Eltringham gives "French Congo" and Stempffer (1954) gives "Cameroun" but these seem doubtful.

This species is obviously common in Liberia. A note by Fox attached to a male from Ganta reads: "These have the odd habit of lighting in pairs on a bare stick, resting at right angles to each other. Have seen this many times."

Liberia: Piste (trail) Kaouyékè-Fléoulokè, Kaouyékè; Taoké; Diakaké (Stempffer, 1950); Kpain, I; Wanau, IV; Venntown, VIII; Yamein, I; Kitoma, VIII (Stempffer and Bennett, 1956); Harbel, 1 ♀, II, 1 ♀, V, 1 ♂, VIII, 1 ♂, X; Fish Lake, 1 ♀, I; Bomi Hills, 1 ♂, 2 ♀, IV; Wanau Forest, 1 ♂, II, 1 ♂, 1 ♀, III, 3 ♂, 4 (sex ?) VIII; Ganta, 3 ♀, II, 1 ♀, III, 1 ♂, 1 ♀, V, 1 ♀, VI, 2 ♀, VII, 1 ♀, VIII; Zorzor, 2 ♂, 3 ♀ (+1, sex ?) XI; trail near Fisabu, 1 ♂, XII; Kpain, 1 (sex ?) X; Yendamalahoun, 1 ♂, 1 ♀, IV; between Vonjima and Yendamalahoun, 1 ♂, IV (all Fox).

Genus **LIPTENA** Hewitson

This large genus, widespread throughout the Guinean Subregion

and extending east and south into Uganda, northern Rhodesia, Katanga and Angola, is in considerable need of revision. It is fully as diverse in structure as it is in facies and almost certainly will need to be divided into several genera. Unfortunately there has not been time for such a study, even in a preliminary way, and beyond grouping apparent relatives together there is no great departure here from traditional treatment.

Despite the many *Liptena* that occur in Nigeria, where Lamborn and Farquharson achieved such brilliant success in rearing Liptenidae, neither of these gentlemen managed to elucidate a single *Liptena* life history. Jackson (1937: 207), however, has given some observations on a species (*undina* Grose-Smith and Kirby) occurring in Uganda which remain, so far as I am aware, the only information we have on the early stages of the genus. The larva described by Jackson is hairy as in other members of the family, but unlike the others it is closely, perhaps obligatorily, associated with ants. It pupated well hidden under bark, near the ant runs.

Liptena opaca Kirby

Larinopoda opaca Kirby, 1890: 266. *Liptena opaca:* Stempffer and Bennett, 1956: 506.

This species previously was known only from southern Cameroon, Rio Muni and Gabon.

Liberia: Kpain, III (Stempffer and Bennett).

Liptena simplicia Möschler

Liptena simplicia Möschler, 1887: 63, fig. 14. Stempffer and Bennett, 1956: 506.
=*Larinopoda albula* H. H. Druce, 1888: 108.
=*Lycaena semilimbata* Mabille, 1890a: 24; pl. 2, fig. 3.

Known from Guinea and Sierra Leone eastward to Ghana; Stempffer and Bennett record it also from former French Congo.

Liberia: Kpain, II, III; Davoyi, I; Dingamo, VIII (Stempffer and Bennett, 1956); Yendamalahoun, 1 ♂, 1 ♀, IV; Wanau Forest, 1 ♀, VIII (Fox).

Liptena alluaudi Mabille

Liptena alluaudi Mabille, 1890a: 23; pl. 2, fig. 2 (Ivory Coast). Stempffer, 1957b: 212; fig. 3.

=*Liptena albicans* Cator, 1904: 76 (Sierra Leone). Aurivillius, 1918 [1908-1925]: 334; pl. 63h. Stempffer and Bennett, 1956: 506 (New Synonym).
Not *Liptena alluaudi* (=*augusta* Süffert, 1904): H. H. Druce, 1910a: 9, 24; pl. 3, figs. 2, 2a (type of *augusta*). Aurivillius, 1918 [1908-1925]: 334; pl. 63h.

In facies these specimens agree closely with Mabille's description and figure and with Stempffer's (1957) comparative description, and the male genitalia conform to Stempffer's figure. These specimens also agree in all significant details with Cator's description of *albicans*. In view of this agreement and of the geographic proximity of the forms involved, I think there can be little question that *albicans* is the same as *alluaudi* and it is accordingly synonymized here. It is curious that Stempffer makes no mention of *albicans* in his discussion of *alluaudi*. The photographic figure of the type of *alluaudi* given by Mabille is overexposed and makes the specimen appear pure white, producing a striking first-glance resemblance to *augusta* Süffert, no doubt the reason for the mistaken use of the name by Druce and Aurivillius. The two, *alluaudi* and *augusta,* are not only very distinct in pattern and genitalia, as Stempffer has shown, they also occur in quite different places: *alluaudi* only in Occidental Africa; *augusta,* so far as I know, only in southern Cameroon.

The species ranges from Sierra Leone and Guinea eastward to Nigeria.

Liberia: Kpain, II (Stempffer and Bennett, 1956); Yendamalahoun, 1 ♂, IV; Ganta, 1 ♂, II (Fox).

Liptena xanthostola xanthostola Holland

Teriomima xanthostola Holland, 1890a: 429. *Liptena xanthostola:* Stempffer and Bennett, 1956: 506.
? Liptena xantha coomassiensis Hawker-Smith, 1933: 8.

This species ranges from Guinea ('Nzerekore, C. M.) and Liberia eastward to Cameroon, Gabon, and on to Uganda, in the latter area as a distinct subspecies (*xantha* Grose-Smith). Hawker-Smith (1933) discriminated his *coomassiensis* from *xantha,* but made no mention of *xanthostola.* Should the Occidental African populations prove different from those of Cameroon and Gabon, his name is available. The single specimen at hand from Guinea is inconclusive on the point.

Liberia: Kpain, II, III, X (Stempffer and Bennett, 1956).

[**Liptena praestans praestans** Grose-Smith]

Pentila praestans Grose-Smith, 1901 [1887-1902] (XXIX): 141; figs. 15, 16. *Liptena praestans:* Aurivillius, 1918 [1908-1925]: 334.

This species was described from Sierra Leone, with other subspecies since named from Cameroon and from Congo. It has not as yet been found in Liberia but seems likely to occur there.

[**Liptena septistrigata** Bethune-Baker]

Pentila septistrigata Bethune-Baker, 1903: 325. *Liptena septistrigata:* Aurivillius, 1918 [1908-1925]: 335.

Described from Sierra Leone and also found in Togo, it is probable that this species will eventually be found in Liberia.

Liptena gordoni H. H. Druce

Pseuderesia gordoni H. H. Druce, 1903: 69. Lathy, 1903: 196, pl. 8, fig. 5. Aurivillius, 1918 [1908-1925]: 324, pl. 62g. Draeseke, 1936: 23. Peters, 1952: 95. *Liptena gordoni:* Stempffer, 1954f: 524; 1961: 25.

=*? Durbania otlauga* Grose-Smith and Kirby, 1890 [1887-1902] (XI): 46, figs. 9, 10. *? Liptena otlauga:* Lathy, 1903: 197. Aurivillius, 1918 [1908-1925]: 338, pl. 621. Peters, 1952: 97. Stempffer, 1957a: 71. *? Liptena ideoides otlauga:* Draeseke, 1936: 37.

=*? Durbania infima* Grose-Smith and Kirby, 1890 [1887-1902] (XI): 46, figs. 15, 16. *? Liptena infima:* Aurivillius, 1918 [1908-1925]: 338, pl. 64a. Draeseke, 1936: 37. Peters, 1952: 97 (as *infirma*).

=*?? Liptena ideoides* (*partim*)*:* Schultze, 1923: 1185.

Three times in recent years Stempffer (1954f, 1957a, 1961) has mentioned *gordoni* as a *Liptena* — the only references I know of that place it in this genus. Study of the Ganta male mentioned below fully confirms this placement and shows, further, that it is closely related to *ideoides* Dewitz, belonging with that species, *otlauga* and *infima* in what may be called the "*ideoides* group."

The *ideoides* group is readily delimitable in both pattern and genital structure: males above have uniform fuscous forewings and boldly, sharply bi-colored (fuscous and orange) hindwings; below they are dark, rather glossy purplish-brown with faint traces of small reddish spots and a postmedian curved band of jet black on the hindwing. Females have much more orange, differently distributed, above and below, but show the same jet black band on the hindwing below. The male genitalia are strikingly distinctive in the apparent complete loss

of uncus and falces. The simple valvae with down-curved apical process, the short saccus, the triangular structure that supports the penis, the configuration of tegumen and vinculum: all these structural points suggest an affinity of this group to *Tetrarhanis,* perhaps closer than to other *Liptena.*

Species identity in this group is a thorny problem, particularly since the male genitalia do not appear to differ specifically at all. Five names are involved: *ideoides* Dewitz, *girthi* Dewitz, *gordoni* H. H. Druce, *otlauga* Grose-Smith and Kirby and *infima* Grose-Smith and Kirby. There is not much doubt that *girthi* is the female of *ideoides,* or that this species is readily and easily distinguished from the remaining three. It is with these last that the trouble lies, and two questions require answers: (1) Are *otlauga* and *infima,* both described from females, the same or different species? and (2) Is *gordoni,* described from a male, the same as either *otlauga* or *infima* (or both)?

Stempffer, who has seen more material in this complex than anyone, writes (personal communication) that there is extensive pattern variation in the material he has seen and that he has yet to find a specimen that agrees perfectly either with Lathy's figure of *gordoni* or Grose-Smith and Kirby' figures of *otlauga* and *infima.* He believes, however, that the last two are probably the same species, and that this species is different from *gordoni.* He adds, "In my collection I *believe* I have succeeded in separating *gordoni* (Liberia, Ivory Coast, Nigeria, British Cameroon) from *otlauga/infima* (Ghana, Nigeria, Cameroon): *gordoni* would be more robust with a broader marginal border on the hindwing above."

Liberia: Kpain, I, IV, VIII (Stempffer and Bennett, 1956); Ganta, 1 ♂, VI (Fox).

Liptena similis Kirby

Pseuderesia similis Kirby, 1890: 264; Grose-Smith and Kirby, 1891 [1887-1902] (XIV): 58, figs. 3, 4. *Liptena similis:* Stempffer and Bennett, 1956: 506.

The male genitalia of this species are identical with those of *intermedia* Grünberg. This is surprising in view of the ready distinction of these species on pattern traits and the good genital characters separating *intermedia* from other closely related species.

Liberia: Kpain, I-IV (Stempffer and Bennett, 1956). The species ranges from Sierra Leone and Guinea to Cameroon and Congo.

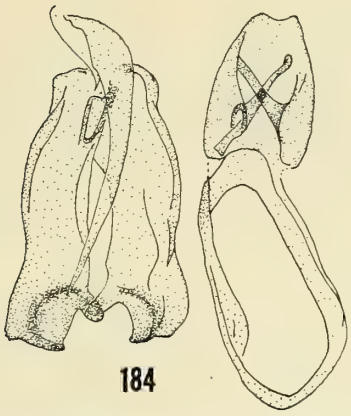


Fig. 184, *Liptena catalina* Smith & Kirby, Yendamalahoun, Liberia, male genitalia (slide C-910).

Liptena rochei Stempffer (Fig. 184)

Liptena rochei Stempffer, 1951: 66, fig. 1; 1952a: 185. Stempffer and Bennett, 1956: 506.

Liberia: Kpain, II, III (Stempffer and Bennett, 1956). The species is known only from Upper Guinea, from Liberia to Nigeria.

Liptena catalina Grose-Smith and Kirby

Pseuderesia catalina Grose-Smith and Kirby, 1887 (I) [1887-1902]: 4; figs. 7, 8 (Cameroon, ♀); 1890 (XI) [1887-1902]: 44; figs. 1, 2 ("Lagos and Sierra Leone", ♂). *Liptena catalina:* Aurivillius, 1920 [1908-1925]: 337; pl. 63k. Schultze, 1923: 1185. Stempffer and Bennett, 1956: 506.

The single Liberian specimen differs in several respects from a short series of males from southern Cameroon: the orange discal patch of the forewing below in M_3-Cu_1-Cu_2 is considerably enlarged and two small orange dots lie in line costad of it; on the hindwing below, in addition to the black dot which lies in the orange spot in Cu_2-2A just below cell, there is also one in the orange spot at cell-end and another in the orange spot in the cell, nearly obscuring the orange in the latter.

From the remarks in Grose-Smith and Kirby (1890) this is probably an individual variant rather than a subspecies. The male genitalia (fig. 184) are identical to those of a specimen from Cameroon.

The species ranges from Sierra Leone to southern Cameroon, only in primary rain forest (Schultze, 1923) and is quite rare.

Liberia: Kpain, II; Davoyi, I (Stempffer and Bennett, 1956): Yendamalahoun, 1 ♂, IV (Fox).

Liptena modesta Kirby

Teriomima modesta Kirby, 1890: 270. Grose-Smith and Kirby, 1892 (XIX) [1887-1902]: 81; figs. 7, 8. *Liptena modesta:* Stempffer and Bennett, 1956: 506.

Liberia: Kpain, II (Stempffer and Bennett, 1956). Prior to this record the species was known only from Nigeria and Cameroon, east to Uganda.

Liptena helena H. H. Druce

Pseuderesia helena H. H. Druce, 1888: 108. *Liptena helena:* Stempffer and Bennett, 1956: 506.

Liberia: Kpain, IV (Stempffer and Bennett, 1956). The species ranges from Sierra Leone and Guinea eastward to Cameroon.

Genus **TETRARHANIS** Karsch

Four of the dozen or so species known to belong to this genus are recorded from Liberia. The group is most strongly developed in the Gabon-Cameroon area (about nine species), but ranges widely through the West African rain forest region from Sierra Leone to Angola and eastward to western Kenya, Uganda and Katanga.

Tetrarhanis laminifer new species (Figs. 185-189)

Both sexes. — Upperside of both wings fuscous brown; costa of hindwing narrowly white, entirely distad of Sc. Fringe of forewing fuscous, of hindwing white to just before Cu_1, narrowly fuscous at ends of veins M_2 and M_3. Underside of both wings white, each with a large oval fuscous spot at cell-end. Forewing usually with a minute fuscous dot in cell at about ⅓; costal area with very sparse sprinkling — almost absent. Apical patch rather slender, from costa to M_3, proximally fused with postmedian line (which continues, free, to Cu_2, interrupted at the veins), distally separated from the coterminous subterminal line by a crenulate white line. Hindwing with postmedian line, interrupted at the veins, variable in extent; it may be nearly complete (M_1 to inner margin) or present only posteriorly (Cu_1 to inner margin), or in varying intermediate conditions. Subapical patch, when present, in M_1-M_3, but it may be slight or absent. Spot in Cu_2-2A at about 2/5 the distance from base to termen very faint or (usually) absent entirely.

Male genitalia (fig. 189). — Uncus deeply bifid; tegumen high and prolonged anteriorly, its posterior border forming in lateral view a sharp right angle with vinculum; falces each with a large transverse subquadrate plate at its elbow — not an appendage but an expansion of the falx itself; this plate bears a long thickened ridge near and parallel to its anterior border. Vinculum somewhat broader at middle than either dorsally or ventrally, straplike as usual in the subgenus. Valva elongate, entire, with a short digitate process mesially, arising on ventral border near tip. Anellus supports triangular, directed perpendicularly to ventral edge of valva; anellus arms dorsally ovately expanded, posteriorly arched, situated more posteriorly than usual in the

Fig. 185, *Tetrarhanis laminifer* new species, Batanga, Cameroon, male holotype, upperside (x 1.4). Fig. 186, same specimen, underside. Fig. 187, the same, Lolodorf, Cameroon, female paratype, upperside. Fig. 188, same specimen, underside.

subgenus, so as to lie almost entirely behind the near vinculum in lateral view. Penis massive but not inflated, caecum not at all downbent, posteroventral process downbent, moderate in length; penis without dorsal teeth.

Holotype. — ♂, Batanga, Cameroon, 2-XII-1911 (A. I. Good), C. M. Acc. 4696.

Paratypes. — 4 ♂, 4 ♀, same data, dated as follows: 18-V-1910, 22-II-1911, 27-III-1911, 4-XI-1911 males; 20, 22, 23-IV-1912, 20-VI-1912 females; 1 ♂, Elat, Cameroon, 28-II-1923 (from Holland Collection ?); 1 ♀, Zingi, 30 miles west of Efulen, 29-VII-1913 (H. L. Weber); 1 ♀, Ajap, Cameroon, 12-VII-1912 (A. I. Good); 2 ♀, Lolodorf, Cameroon, 6-III-1911 (A. I. Good) and 22-I-1915 (J. A. Reis). C. M. Ent. type series no. 418.

Remarks. — In addition to the type series there are specimens in Carnegie Museum from these localities: Liberia (no further data, A. C. Good); Rio Muni (Benito); Gabon (Talaguga and Kangwé, Ogové River; both probably A. C. Good).

The species is closely related to *rougeoti* Stempffer (1954a: 92; fig. 2, pl., fig. 9), differing in the following pattern traits: the hindwing fringe above in *rougeoti* is white from apex to M_1 and is rather dull, whereas in *laminifer* the white extends to beyond M_3 and is

bright and prominent; in *rougeoti* the forewing costa below is sprinkled with fuscous and has a fuscous shade opposite the cell-end spot, while in *laminifer* the sprinkling is almost absent and there is no fuscous shade. The apical patch of the forewing below is heavy in *rougeoti,* costally obscuring the crenulate white line between it and subterminal fuscous line, while in *laminifer* it is thinner and does not obscure the white line; the subterminal fuscous line of the forewing below extends continuously to Cu_1 in *rougeoti,* but in *laminifer* it is coterminous with the apical patch, not extending beyond M_3. In addition there is usually a tiny fuscous spot in the forewing cell below, at about one-third in *laminifer,* two-thirds in *rougeoti*; the hindwing apical patch below is usually stronger (thicker) in *rougeoti* than in *laminifer,* where it is frequently absent.

The most striking difference, however, is found in the male genitalia (see fig. 190). The presence of the subrectangular lamella on each falx will immediately separate *laminifer,* not only from *rougeoti* but from all other *Tetrarhanis* known. In addition, *laminifer* differs from *rougeoti* in the much higher tegumen and in the ovate expansion of the ends of the anellus arms.

Tetrarhanis diversa diversa Bethune-Baker (Fig. 191)

Liptena diversa Bethune-Baker, 1904: 225. *Liptena* (*Tetrarhanis*) *diversa:* Stempffer and Bennett, 1956: 507.

The nominate subspecies is known only from Sierra Leone, Liberia, and Gabon. Far to the east, in the eastern Congo, Kenya and Uganda, occurs the very distinct subspecies *ilala* Riley, which, indeed, may be a good species.

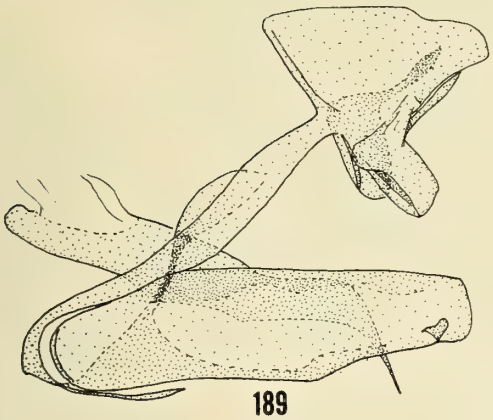
The male genitalia (fig. 191) have not been figured previously.

Liberia: Kpain, I, II, V, IX; Wanau, IV (Stempffer and Bennett, 1956); St. Paul River at Zorzor Road, 1 ♂, 1 ♀, IV (Fox).

Tetrarhanis simplex symplocus new subspecies (Figs. 192-196)

? Tetrarhanis ilma Hewitson: Karsch, 1893, p. 217.
Liptena (*Tetrarhanis*) *ilma simplex* Aurivillius: Stempffer, 1950: 403; Stempffer, 1952a: 185; Stempffer and Bennett, 1956: 507.

Fig. 189, *Tetrarhanis laminifer* new species, Talaguga, Gabon, male genitalia (slide C-882). Fig. 190, *Tetrarhanis rougeoti* Stempffer, Efulen, Cameroon, male genitalia (slide C-884). Fig. 191, *Tetrarhanis diversa diversa* Bethune-Baker, St. Paul R. at Zorzor Rd., Liberia, male genitalia (slide C-895). Fig. 192, *Tetrarhanis simplex symplocus* new subspecies, Harbel, Liberia, male genitalia, holotype (slide C-894).



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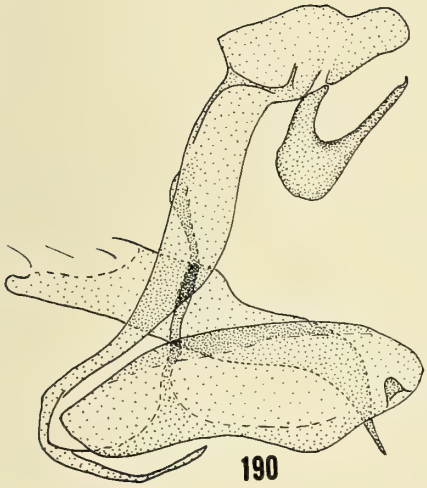

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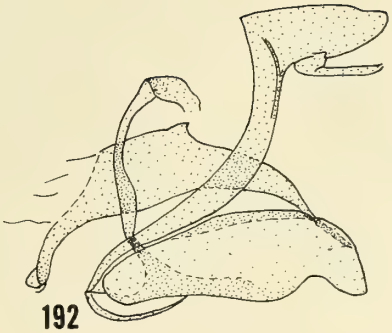


192

Differs from nominate *simplex* (Nigeria to Gabon) in several respects. The apical patch on the forewing below, instead of stopping at M_3, is usually prolonged as a thin crenulate line to 2A, while the patch itself is slightly thicker, its proximal edge usually approaching closer to the postmedian line than in typical *simplex*. In the forewing cell a tiny fuscous spot is usually present at two-fifths, while in typical *simplex* it is always absent. On the hindwing below the postmedian line is somewhat more distal in position than usual in *s. simplex*, though it is quite variable in the latter. In the male genitalia (fig. 192) the posteroventral process of the penis is noticeably shorter and the small lamellae on the caecum penis are found only on the distal and dorsal edges, instead of the distal, dorsal and ventral edges as in *s. simplex* (these genital differences are constant in three *s. simplex* and two *simplex symplocus* examined).

Holotype. — ♂, Harbel, Marshall Territory, Liberia, 27-IX-1954. (R. M. Fox).

Paratypes. — Liberia: Harbel, 1954, IX (3 ♂), 1955, I (1 ♀), II (1 ♂), III (1 ♂, 1 ♀), VIII (4 ♂, 1 ♀), XI (2 ♂), 1956, II (2 ♂), IV (1 ♀), V (1 ♂, 1 ♀), VI (1 ♀), 1957, V (1 ♂, 1 ♀); Fish Lake, 1955, I (2 ♂, 1 ♀); Ganta, 1958, II (1 ♀), VI (1 ♂), VII (1 ♂, 1 ♀), IX (1 ♂); Wanau Forest, 1958, II (1 ♂), III (1, sex ?), VI (2 ♂), X (1 ♂); Zorzor, 1958, XI (1 ♂, 1 ♀); Yendamalahoun, 1958, IV (1 ♂). All R. M. Fox. C. M. Ent. type series no. 420.

Remarks. — With both genital and pattern differences separating it from *s. simplex*, and with Nigerian *simplex* showing no indication of transition, it is possible that *symplocus* is a good species. Because of the slightness of the differentiation and of the geographic replacement, however, it seems more reasonable to consider them subspecies. Material from intervening regions is needed before the matter can be resolved.

In addition to the type series there is a pair in the collection of Carnegie Museum from Liberia (no further data, A. C. Good). Stempffer (1950) gives the following localities: Dyiokouikè; Touzon. Stempffer and Bennett (1956) add the following: Kpain (I, III, IV, VI, VIII, IX); Baila (VIII); Vaa (VIII).

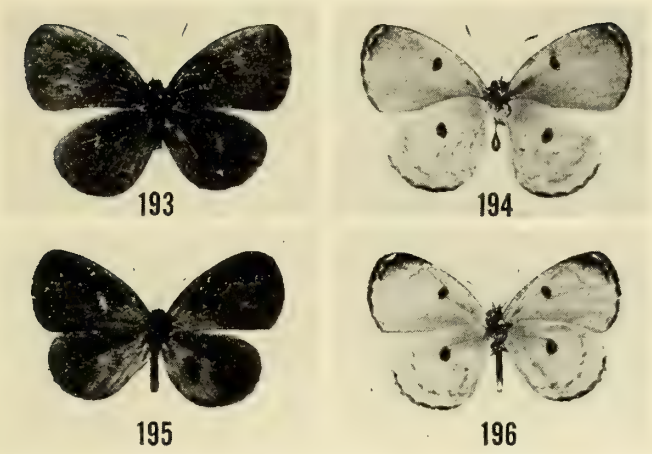


Fig. 193, *Tetrarhanis simplex symplocus* new subspecies, Harbel, Liberia, male holotype, upperside (x 1.4). Fig. 194, same specimen, underside. Fig. 195, the same, same locality, female paratype upperside (x 1.4). Fig. 196, same specimen, underside.

The species ranges from Sierra Leone to Togo (all presumably of the present subspecies), from Nigeria to Gabon (nominate *simplex*) and Uganda (subspecies *daltoni* Poulton).

Tetrarhanis stempfferi stempfferi Berger

Liptena (*Tetrarhanis*) *stempfferi* Berger, 1954b: 307; figs. 5-8. Stempffer and Bennett, 1956: 507.

The nominate subspecies ranges widely from Liberia to Gabon and the Congo. Farther east the subspecies *kigezi* Stempffer occurs in Uganda.

Liberia: Kpain, II, IX; Sopia, II (Stempffer and Bennett 1956).

Genus **FALCUNA** Stempffer and Bennett

This genus was recently erected and contains some of the species that once were placed in *Liptena*. It is purely West African, with its center of distribution in Lower Guinea and Congo. Only two species are known from Liberia and no others are expected to be found there. I know of no information on life history.

Falcuna leonensis Stempffer and Bennett

Liptena libyssa: of authors, including Stempffer, 1950: 403; Stempffer and Bennett, 1956: 506; Stempffer, 1963b: 424.

Falcuna leonensis Stempffer and Bennett, 1963: 174; figs. 1-3, pl. 1, figs. 56-59.

Liberia: Penoké (Stempffer, 1950), Kpain, I, II, IV; Sopia, II (Stempffer and Bennett, 1956); Ganta, X (Leland) (CM); Kpain, 1 ♂, X; Wanau Forest, 1 ♀, II, 1 ♀, III, 3 ♂, 2 ♀, X; Zorzor, 3 ♂, XI; Yendamalahoun, 2 ♂, IV (all Fox). The species is restricted to Occidental Africa, ranging from Sierra Leone and Guinea eastward to Ghana.

Falcuna campimus campimus Holland

Larinopoda campimus Holland, 1890a: 427. *Liptena campimus:* Stempffer and Bennett, 1956: 506. *Falcuna campimus campimus:* Stempffer and Bennett, 1963: 191; figs. 51, 52, pl. 4, figs. 126, 127, pl. 5, figs. 128, 129.

The species ranges from Sierra Leone eastward through Nigeria and south through Cameroon to Gabon. A local form or subspecies (evidence is not clear which) occurs from Ghana to northwestern Cameroon, *dilatata* Schultze and Aurivillius.

Liberia: Kpain, II-IV (Stempffer and Bennett, 1956).

Tribe IRIDANINI new tribe

Agrees with the Liptenini (and differs from the Epitolini) in having the stalked vein R_{3-4} (R_5 is absent) of the forewing arising very close to the upper angle of the cell and hence to the origin of M_1; differs from that tribe, and agrees with the Epitolini, in the presence of coremata (*cf.* Varley, 1962), eversible pregenital ventral sacs in the male, apparently ventral expansions of the 8th-9th intersegmental membrane (fig. 197). When everted the sac wall is seen to be provided with a profusion of erect modified scales, each about as long as the valva, lightly colored (almost transparent) and spindle-shaped. The general form of this sac is as in the Epitolini except that the scales are longer, proportionately thicker and much paler in color, and the sac itself seems to be proportionately a little larger. Male genitalia: falces absent, valva distally distinctly bilobed. In the Epitolini the falces are always present and the valva distally has only one lobe. The loss of R_5 on the forewing has left the free part of R_4 curiously sinuate, identified as R_4 by its ending on costa just before apex.

Iridana, the only genus known to belong in this tribe, has been related hitherto to the genera here classed as Liptenini, chiefly because of the forewing vein configuration. The size, wing shape, proportionately stouter body, vivid iridescent blue above, as well as the presence of coremata, seem to relate it more to the Epitolini. It appears to differ sufficiently from both these tribes to merit separate tribal status.

Genus IRIDANA Aurivillius

This is a small genus of brilliant and generally rare liptenids chiefly found in the rain forest regions. Much information on the life history

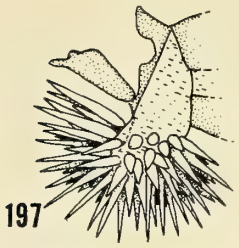


Fig. 197, *Iridana perdita* Grose-Smith and Kirby, Efulen, Cameroon, male genitalia (slide C-996) in lateral view, showing exserted coremata.

of the genus may be found in Farquharson *et al.* (1922), Pomeroy (1924), and Jackson (1937).

Iridana incredibilis Staudinger

Iris incredibilis Staudinger, 1891: 141; pl. 1, fig. 7. *Iridana incredibilis:* Stempffer and Bennett, 1956: 507.

The species ranges from Sierra Leone through Nigeria to Uganda. Liberia: Kpain, VIII (Stempffer and Bennett, 1956).

Tribe Epitolini

Distinguished by the following combination of characters: origin of stalked R_{3-5} of forewing distinctly separated from origin of M_1 by at least as great a space as between it and origin of R_2; all five radials present; males with androconial patch often associated with vein 2A of forewing; coremata present in males, prominent (when exserted), the investing scales smaller than in the Iridanini and nearly black; falces present; valva distally with only one lobe; penis straight or slightly arcuate, stout, simple.

The male genital structures are quite uniform throughout the group, offering little help in the determination of relationships among the genera. The early stages, however, hold some promise in this connection (see Aurivillius, 1923: 1198-1199).

The Epitolini are stout-bodied insects, with ample, strong wings; they are almost universally blue above, at least in the males, and their pattern below is often very un-lycaenoid, recalling certain nymphalids in a general way. None of the species can be considered very common in collections and many are exceedingly rare. They appear to be confined to the great West African rain forest, occurring from Sierra Leone eastward to Uganda, and south to northern Angola.

The genus *Deloneura* Trimen (extralimital) quite probably belongs here (see remarks in subfamily discussion of Liphyrinae below), though it embodies exceptions to several of the statements above: it

lacks one radial vein; both sexes are predominantly orange or ochreous; and it occurs in southern and eastern Africa.

Genus **EPITOLINA** Aurivillius

Epitolina is a small and curious genus, widespread in West Africa. Three species are known (one of them in manuscript), two of which are considered here.

Epitolina dispar Kirby

Teriomima dispar Kirby, 1887: 367 (♂, Cameroon; the supposed ♀, from Ashanti, is *catori*). Grose-Smith and Kirby, 1888 [1887-1902] (IV): 17; figs. 9, 10 [figs. 11, 12, are ♀ *catori*]. *Epitolina dispar:* Aurivillius, 1920 [1908-1925]: 348 (including forms *cordelia* [pl. 64d] and *melissa*). Schultze, 1923: 1193. Draeseke, 1936: 43. Stempffer and Bennett, 1956: 507 (including form *melissa*; Liberia).

=*Liptena mnestra* Möschler, 1887: 63; pl., fig. 21 (Togo).

=*Teriomima melissa* H. H. Druce, 1888: 109 (Addah [Ghana]). *Epitolina dispar melissa:* Stempffer, 1952a: 185 (Togo); 1954c: 348 (Republic of Guinea).

=*Teriomima cordelia* Kirby, 1890: 270 (Cameroon; Gabon); Grose-Smith and Kirby, 1892 [1887-1902] (XIX): 82; figs. 9, 10.

The female which Kirby somewhat hesitantly associated with the male of *dispar* has a prominent orange discal patch on the forewing above. So far as I am aware this never occurs in *dispar* at all, females of this species being uniform fuscous above. This character, however, is characteristic of *catori* (see below) and a related new species from Cameroon and Gabon. In view of the locality, Ashanti, of Kirby's female I suppose that it must be a female of *catori*.

E. dispar may be identified readily by the uniform fuscous of the female above, the dully iridescent violet-blue of males above and the uniform fuscous fringes of both wings in both sexes, lacking the white checking that is found in *catori* and the undescribed species.

The under surface pattern is exceedingly variable (see Schultze, 1923), a fact that is responsible for much of the above synonymy. Somewhat arbitrarily, for there is much intergradation, a sequence of four forms may be recognized:

Form (1) (*"melissa"=cordelia*). The pale lines of the hindwing below are all ochre-colored, subequal in thickness and small, tending frequently to complete obsolescence.

Form (2) (*"dispar"*). The discal line of the hindwing below is usually composed of a round or subquadrate spot at cell-end, a smaller

TABLE 3

Occurrence of *Epitolina dispar* forms in different areas in West Africa

Area	No. of Specimens	Percentages of Form (1)	Form (2)	Form (3)	Form (4)
Liberia	22*	41	59	—	—
Nigeria	10	70	30	—	—
Cameroon	171	40	51	8	1
Gabon	18	—	28	39	33
Uganda	4	100	—	—	—

* Includes those listed by Stempffer and Bennett, 1956.

spot on costa and one or two posteriorly. These spots are somewhat larger than most of the remaining markings on the wing, and are orange or (males) red in contrast to the more ochreous remaining markings.

Form (3). The discal line of hindwing below is as in form (2) but with additional spots intercalated to make a nearly continuous, if irregularly thick, line, thicker than in form (2) and orange to red in color.

Form (4). The discal line of hindwing below is still thicker, being much the most prominent pattern element on the wing surface, orange in females, red in males.

The occurrence of these forms is at least partially correlated with geography as Table 3 shows. In Occidental Africa, from Liberia to Nigeria, only forms (1) and (2) seem to occur, in approximately equal numbers. In southern Cameroon all four forms occur, but the first two are again in subequal numbers and make up most of the population. In Gabon, however, form (1) has dropped out completely and the remaining forms (2), (3) and (4) are subequal in numbers. The number of specimens at hand from Uganda (four) is too small to generalize from, but all are of form (1). Only a single specimen is at hand from Rio Muni (Benito) and it is of form (1).

The species ranges from Sierra Leone and Guinea eastward through Nigeria to Gabon, Congo and Uganda.

Liberia: Kpain, I, II, III, V (Stempffer and Bennett, 1956); Ganta, 1 ♂, 1 ♀, II, 1 ♂, III, 1 ♂, IV, 1 ♂, V, 1 ♂, VI, 2 ♂, VII, 1 ♂, VIII; Wanau Forest, 1 ♂, II, 1 ♀, III, 1 ♂, VI, 1 ♀, X (Fox).

[**Epitolina catori catori** Bethune-Baker]

? *Teriomima dispar* ♀: Kirby, 1887: 367 (Ashanti); Grose-Smith and Kirby, 1888 [1887-1902] (IV): 17; figs. 11, 12.
Epitolina catori Bethune-Baker, 1904: 227 (Sierra Leone). Aurivillius, 1920 [1908-1925]: 348.

This species has not as yet been taken in Liberia, but it could occur there. The species was described from Sierra Leone and the female from Ashanti described by Kirby (and later figured in Grose-Smith and Kirby) as probably belonging to *dispar* seems to be *catori* as well, to judge by the forewing orange patch above. A subspecies (*ugandae* Jackson, 1962: 159; pl. 11, figs. 99, 100, pl. 12, figs. 109, 110) has recently been described from Uganda.

The checkered fringes of both sexes and the large forewing orange patch on the female above will distinguish this species from *dispar*. A related, but as yet undescribed, species occurs in Cameroon and Gabon.

Genus **EPITOLA** Westwood

Two revisionary studies on this genus have been published in recent years (Roche, 1954; Jackson, 1962) and together they have resulted in a considerable improvement in knowledge of the group. Roche has provided a key to species and a check list; Jackson an improved arrangement (followed here) and much new information on synonymy, distribution and on the hitherto very poorly known females.

The genus extends from Sierra Leone to Kenya and south as far as Angola. It reaches peak development in the rain forest region of Equatorial West Africa from Nigeria to Gabon and eastward far into the Congo. It is well represented in Occidental Africa and in Uganda. Everywhere the species are uncommon to rare and several are still known from single specimens only.

Life history information is available for several species (Farquharson *et al.*, 1922). The group follows the same general pattern as other liptenids: the known larvae are all lymantrioid in form, are feeders on lichens on the bark of trees, and do not appear to be ant attended. The pupa lacks a girdle, being attached rather broadly by cremaster alone and often inclined to the substrate.

In the species accounts below, references to Roche's paper are

ordinarily not given. He lists each species in his check list and covers each in his key (but see Jackson for revised nomenclature in some cases).

The **hewitsoni** group

[Epitola miranda miranda Staudinger]

Epitola miranda Staudinger, 1889: 176. Jackson, 1962: 126; pl. 1, fig. 1, pl. 2, fig. 10.

Recorded from Sierra Leone, Nigeria and Cameroon, this species has not as yet been found in Liberia but should occur there. There is a subspecies, *vidua* Talbot, in Uganda.

The **posthumus** group

[Epitola posthumus Fabricius]

Papilio posthumus Fabricius, 1793 [1793-1794]: 128. *Epitola posthumus:* Aurivillius, 1920 [1908-1925]: 351; pl. 64e. Jackson, 1962: 128.
=*Epitola belli* Hewitson, 1874d: 382 (♀).

Jackson records this species from Ghana eastward to Uganda, south into former French Equatorial Africa. Aurivillius (1920) records it from Sierra Leone as well. It has not as yet been found in Liberia.

Epitola urania urania Kirby

Epitola urania Kirby, 1887: 441. Jackson, 1962: 128; pl. 1, fig. 3, pl. 2, fig. 12, pl. 9, fig. 85, pl. 10, fig. 95.

E. u. urania ranges from Sierra Leone to former French Equatorial Africa. The subspecies *tanganikensis* Joicey and Talbot occurs in Uganda and eastern Congo.

Liberia: No further data (Jackson, 1962).

[Epitola crowleyi Sharpe]

Epitola crowleyi Sharpe, 1890a: 106. Jackson, 1962: 129.

This species ranges from Sierra Leone through Nigeria to Uganda, Congo and former French Equatorial Africa. No records are yet known from Liberia.

Epitola ceraunia Hewitson

Epitola ceraunia Hewitson, 1873: 149. Jackson, 1962: 129.
=*Epitola dewitzi* Kirby, 1887: 442 (♀).

The species ranges from Sierra Leone through Nigeria to Uganda, Congo and former French Equatorial Africa.

Liberia: No further data (Jackson, 1962).

The **carcina-nitide** group

[**Epitola moyambina** Bethune-Baker]

Epitola moyambina Bethune-Baker, 1903: 330. Jackson, 1962: 130; pl. 1, fig. 5, pl. 2, fig. 14.

This species ranges from Sierra Leone to Nigeria. No Liberian specimens are as yet known.

Epitola uniformis Kirby

Epitola uniformis Kirby, 1887: 445 (♂). Jackson, 1962: 132; pl. 1, fig. 8, pl. 2, fig. 17.
=*Epitola versicolor* Kirby, 1887: 444.
=*Epitola leonina:* of authors, including Roche, 1954 (?) in part.

The species ranges from Sierra Leone to Nigeria and south to Angola.

Liberia: no further data (Good; Naysmith: 1 ♀ each); Harbel, 1 ♀, III (Fox).

Epitola dorothea Bethune-Baker

Epitola dorothea Bethune-Baker, 1904: 227. Jackson, 1962: 133; pl. 9, fig. 87, pl. 10, fig. 97.

The species occurs from Sierra Leone to Ghana.

Liberia: Ganta, 1 ♂, VII; Wanau Forest, 1 ♀, X (Fox).

[**Epitola staudingeri staudingeri** Kirby]

Epitola staudingeri Kirby, 1890: 271. Jackson, 1962: 134; pl. 3, fig. 19, pl. 4, fig. 29.
=*Epitola gordoni* Druce, 1903: 70. *Epitola staudingeri gordoni:* Jackson, 1962: 135.

Jackson (1962) refers to *gordoni* under a separate head (and hence, by implication, as a valid subspecies). This must have been inadvertent since in his discussion he states that he considers *gordoni* a synonym of *staudingeri.*

Though not as yet recorded from Liberia, the occurrence of this species there seems likely. It has been taken in Sierra Leone and Nigeria (nominate subspecies), Gabon and former French Equatorial

Africa (subspecies *aequatorialis* Jackson). There also are specimens of the latter subspecies in Carnegie Museum from southern Cameroon (Batanga; Lolodorf).

[**Epitola leonina** Staudinger]

Epitola leonina Staudinger, 1888 [1884-1888]: 268. Jackson, 1962: 136; pl. 3, fig. 21, pl. 4, fig. 31.
=*Epitola ciconia* Grose-Smith and Kirby, 1892 [1887-1902] (XVII): 58; figs. 5, 6.

Though not as yet taken in Liberia, the species has been recorded from Sierra Leone and from Nigeria to Uganda and former French Equatorial Africa.

[**Epitola albomaculata** Bethune-Baker]

Epitola albomaculata Bethune-Baker, 1903: 329. Jackson, 1962: 138.

The species is known from Sierra Leone and Nigeria but has not as yet been taken in Liberia.

[**Epitola virginea** Bethune-Baker]

Epitola virginea Bethune-Baker, 1904: 230. Roche, 1954: 501; pl. 20, figs. 17, 18. Jackson, 1962: 139.

No Liberian records are as yet known. The species ranges from Sierra Leone to Ghana.

[**Epitola elissa** Grose-Smith]

Epitola elissa Grose-Smith, 1898: 354. Jackson, 1962: 139; pl. 3, fig. 25, pl. 4, fig. 35.
=*Epitola oniensis* Bethune-Baker, 1914a: 501.

The species is known from Sierra Leone and Nigeria (including former British Cameroons). No Liberian specimens are as yet known.

Epitola carcina Hewitson

Epitola carcina Hewitson, 1873: 150; 1878 [1862-1878]: 20; pl. 1b, figs. 17, 18. Stempffer and Bennett, 1956: 507. Jackson, 1962: 140.
=*Epitola kholifa* Bethune-Baker, 1904: 229.
=*Epitola entebbeana* (♀ only): Bethune-Baker 1926: 392.

This species is recorded from Sierra Leone, Nigeria and Cameroon; Stempffer and Bennett (1956) add Gabon and Congo.

Liberia: Kpain, II (Stempffer and Bennett, 1956).

[**Epitola dunia** Kirby]

Epitola dunia Kirby, 1887: 441. Jackson, 1962: 141; pl. 3, fig. 28, pl. 4, fig. 38.

This species is not yet known from Liberia, but should occur there. It is recorded from Sierra Leone and Nigeria (including former British Cameroons). There are specimens in Carnegie Museum from Cameroon (Efulen; Ajap).

The **pinodes** group

[**Epitola pinodes** Druce]

Epitola pinodes H. H. Druce, 1890: 24. Jackson, 1962: 143.

This species ranges from Sierra Leone to Nigeria, probably occurring also in Liberia though no specimens from there are known as yet.

[**Epitola nigra** Bethune-Baker]

Epitola nigra Bethune-Baker, 1903: 331. Jackson, 1962: 145.

Although not yet known from Liberia, the species is reported from Sierra Leone, Nigeria and Cameroon.

[**Epitola cephena cephena** Hewitson]

Epitola cephena Hewitson, 1873: 151. Jackson, 1962: 146.
=*Epitola doleta* Kirby, 1890: 273. And of authors.
=*Phytala leonina* Bethune-Baker, 1903: 328 (preoccupied).
=*Epitola leonensis* Bethune-Baker, 1904: 227.

Not so far known from Liberia, this species ranges from Sierra Leone to Nigeria, Cameroon and former French Equatorial Africa. A subspecies (*entebbeana* Bethune-Baker) is known from the Congo and Uganda.

Epitola obscura Hawker-Smith

Epitola obscura Hawker-Smith, 1933: 11. Jackson, 1962: 152.

A Liberian male keys (Roche, 1954: 491) without difficulty to *obscura* and agrees well with the original description. The associated female is badly battered but corresponds closely with the male in size and in the color and pattern of the underside. Above, this female (insofar as can be made out) is dark black-brown on both wings, the

forewing with two or three small, rather sharp, pale blue spots in a diagonal subcostal row just beyond cell. I can see no other markings except some small darker blue spots just below cell end, but the poor condition of the specimen precludes more detail. The species, according to this female (unknown to Jackson, 1962), would appear to fall in Jackson's group B of the *pinodes* group.

This species has been recorded previously only from Nigeria and Ghana.

Liberia: Harbel, 1 ♂, XI, 1 ♀, IV (Fox).

[**Epitola conjuncta conjuncta** Grose-Smith and Kirby]

Epitola conjuncta Grose-Smith and Kirby, 1893 [1887-1902] (XX): 86; figs. 3-5. Jackson, 1962: 151.

This species has been recorded from Sierra Leone and former French Equatorial Africa. The nominate subspecies is extremely rare but, curiously, the subspecies *budduana* Talbot from Uganda has been taken in some numbers.

[**Epitola pinodoides** Grose-Smith and Kirby]

Epitola pinodoides Grose-Smith and Kirby, 1893 [1887-1902] (XX): 85; figs. 1, 2. Jackson, 1962: 152.

Possibly, as Jackson notes, this is a synonym of *cephena*. Only the type from Sierra Leone is known.

The **sublustris** group

[**Epitola vinalli** Talbot]

Epitola vinalli Talbot, 1935: 75. Jackson, 1962: 154; pl. 7, fig. 68, pl. 8, fig. 78.
=*Epitola subcoerulea* Roche, 1954: 498; pl. 21, figs. 25, 26.

Not as yet known from Liberia, this species has been recorded from Gambia, Sierra Leone and former French Equatorial Africa.

[**Epitola sublustris** Bethune-Baker]

Epitola sublustris Bethune-Baker, 1904: 228. Jackson, 1962: 154.

This species has not yet been taken in Liberia. The species ranges from Sierra Leone to Nigeria and adjacent southwestern Cameroon.

Genus **PHYTALA** Westwood

This genus hitherto has contained, in addition to the type species, a number of much smaller and quite different-looking species, solely by virtue of the shared character of anastomosis of forewing veins Sc and R_1. In view of several significant structural differences between the present species and these smaller ones, the latter are removed to a new genus, described below. *Phytala,* then, contains only the single species, *elais.*

Phytala elais catori Bethune-Baker

Phytala elais catori Bethune-Baker, 1903: 328. Aurivillius, 1920 [1908-1925]: 349. Draeseke, 1936: 44.
=*Phytala elais catori* ab. *elaidina* Strand, 1920b: 133; 1926: 402.

This subspecies was described from Sierra Leone and is here recorded from Liberia for the first time. The nominate subspecies occurs from Ghana (according to Aurivillius, 1920) eastward to the northern Congo, south to Gabon.

Liberia: Harbel, 1 ♂, III, 1 ♂, XI (Fox).

HYPOPHYTALA, new genus

Type species. — *Epitola hyettoides* Aurivillius, 1895.

Like *Phytala* (*elais*) with forewing veins Sc and R_1 anastomosed for a considerable distance, then reseparating, but differing from *Phytala* in the following characters: the antennae have an abruptly incrassate club (in *Phytala* the thickening is slight and so gradual that the club itself is hardly distinguishable); the frontal hair is rather longer; the terminal segment of the palpi somewhat more slender; on the forewing the termen is regularly and evenly convex (in *Phytala* it is slightly concave, resulting in a slight, rounded falcation at apex); the origins of the radial veins (R_1, R_2, stalk of R_{3-5}) are less widely separated from the origin of M_1. The legs are much less swollen than in *Phytala,* in which all legs, particularly their femora and basitarsi, are greatly thickened. In *Phytala,* for example, the hind tibia has a greatest diameter of about 3/4 the horizontal diameter of an eye in lateral view, whereas in *Hypophytala* this ratio is barely more than 1/3. There is, furthermore, a considerable difference in size, *Phytala*

having a forewing length (about 31 mm.) nearly twice that of *Hypophytala* (about 16 mm.). Genitalically there is, as usual in the tribe, little to distinguish the genera, though the type species, *hyettoides,* at least has a dorsal projection at the middle of the penis that is lacking in *Phytala,* and the penis of *hyettoides* is proportionately a little stouter.

Hypophytala will include all species, except *elais,* formerly placed in *Phytala,* as for example by those in Peters (1952: 99), with the addition of *benitensis* Holland (Jackson, 1962: 155). The genus is badly in need of revision.

Hypophytala henleyi Kirby

Epitola henleyi Kirby, 1890: 272. *Phytala henleyi:* Aurivillius, 1920 [1908-1925]: 349; pl. 64d. Draeseke, 1936: 45. Stempffer and Bennett, 1956: 507.

Prior to this record the known range extended from Cameroon and Gabon to eastern Congo (Ituri region).

Liberia: Kpain, II (Stempffer and Bennett, 1956).

[**Hypophytala hyettina** Aurivillius]

Phytala hyettina Aurivillius, 1897: 214; 1920 [1908-1925]: 249; pl. 65d. Draeseke, 1936: 44.

This species was described from Sierra Leone and may possibly occur in Liberia. It is possible, in fact, that the single female discussed next below belongs here.

Hypophytala species (near **hyetta** Hewitson, 1873)

Liberia: Harbel, 1 ♀, XI (Fox).

Without a male, the identification of this single specimen is impossible. Above both wings are unrelieved fuscous. Below, the forewing is smoky black, becoming brownish terminally and apically; a subterminal row of whitish bars from tornus to apex, diverging slightly from termen costad; a postmedian series of whitish patches in a convex line, the member in M_3-Cu_1 absent; inner marginal area whitish. Hindwing below brown, with a straight whitish band about 1 mm. thick crossing the wing from costa through cell-end to middle of inner margin; this band is obscurely interrupted by brown at and just costad of M_1 and at the apex is abruptly but slightly thickened, and joins a subterminal series of faint linear pale bars parallel to termen. It is

clearly related to *hyetta* and *hyettina,* and just possibly is the female of *hyettina.*

Genus **AETHIOPANA** Bethune-Baker

The single species of this monotypic genus is one of the commonest members of the tribe. Life history information is given in Farquharson *et al.* (1922).

Aethiopana honorius divisa Butler

Epitola divisa Butler, 1901a: 289. *Epitola honorius divisa:* Aurivillius, 1920 [1908-1925]: 351. Stempffer and Bennett, 1956: 507.
Aethiopana honorius: Stempffer, 1952: 145; 1952a: 185; 1954c: 348.

The subspecies *divisa* ranges from Guinea and Sierra Leone eastward at least as far as Ghana. The nominate subspecies occurs in Cameroon and Gabon, eastward through the Congo to Uganda.

Liberia: Kpain, II; Davoyi, I; Yamein, I (Stempffer and Bennett, 1956); Yendamalahoun, 3 ♂, IV; Wanau Forest, 1 ♂, I, 1 ♂, III, 1 ♂, V, 4 ♂, X; Zorzor, 1 ♂, XI (all Fox).

Genus **HEWITSONIA** Kirby

This small, distinctively patterned genus, currently in need of revision, includes about a half-dozen species, chiefly in the Cameroon-Gabon-Congo region. Only one species occurs in Liberia. Information on the early stages may be found in Farquharson *et al.* (1922).

Hewitsonia boisduvalii Hewitson (subspecies ?)

Corydon boisduvalii Hewitson, 1869 [1862-1878] suppl.: 1; pl. 1. *Hewitsonia boisduvalii:* Hewitson, 1878 [1862-1878] suppl.: 17; pl. 1a, fig. 1 only (fig. 2=*similis* Aurivillius). Aurivillius, 1920 [1908-1925]: 360; pl. 64f. Stempffer, 1952c: 145; 1954c: 348. Stempffer and Bennett, 1956: 507.

The species ranges from Guinea and Liberia through Ghana and Nigeria to Gabon and eastern Congo. In the eastern extremity of this range the subspecies *congoensis* Joicey and Talbot (1921: 87; pl. 14, fig. 64) occurs; nominate *boisduvalii* is found in Cameroon and Gabon, and Jackson (1962: 160; pl. 11, figs. 104, 105, pl. 12, figs. 114, 115) has recently described a subspecies *nigeriensis* from southern Nigeria. Liberian specimens appear to be closer to *nigeriensis*

than to any other, yet the males definitely do not agree, the subapical spots on the forewing having about as much white in them as in nominate *boisduvalii*. The Liberian series at hand is too limited (only a single female and only one male in sufficiently good condition) to use as a basis for a new name, though this would seem eventually desirable. It is curious that the Liberian series stands more or less intermediate between *boisduvalii s.s.* and *b. nigeriensis,* despite its occurrence at the western end of the range.

Liberia: Yamein, I; Bahn, VIII (Stempffer and Bennett, 1956); St. Paul River at Zorzor Road, 1 ♂, III; Ganta, 1 ♀, II; Wanau Forest, 1 ♂, III; Yendamalahoun, 1 ♂, IV (Fox).

LIPTENIDAE — position uncertain

Genus **TUMEREPES** Bethune-Baker

Only the little known species *flava* Bethune-Baker (1913: 565) belongs to this genus. It was described from the Upper Niger River and hence may be found in Liberia though no specimens are as yet known.

Genus **TERATONEURA** Dudgeon

This curious genus contains a single species, *T. isabellae* Dudgeon (1909: li), described from Sierra Leone and since taken in Nigeria. It also occurs in Congo and Uganda (ssp. *congoensis* Stempffer, 1954). Although it has not been found in Liberia its occurrence there seems likely.

References to the genus and species are scattered. The following list is not complete but does include the most important references. Dudgeon, 1909: 1 (original description). H. H. Druce *et al.,* 1912: pl. 9, fig. 1 (colored figure of type). Aurivillius, 1920 [1908-1925]: 344; pl. 65c. Farquharson *et al.,* 1922: 339 ff., 476; pl. 12, figs. 7-9, 14, 15 (extensive information on life history). Bethune-Baker, 1925: 205-206; fig. 2 (venation; redescription; localities; erroneously placed in Liphyridae). Stempffer, 1954e: 15-16 (discussion; structure; ssp. *congoensis* named; localities). Stempffer, 1957a: 81; figs. 94-95 (description; photographs). Jackson, 1961: 346, 349 (capture on a high tower in Uganda forest).

Family Liphyridae

Middle and hindlegs without spurs; tarsal claw always with an endodont; male fore tarsus may be fully formed as in the female or fused to a single clawless segment which is ventrally spined (often relatively weakly) and usually ends in a ventrally curved point.

Two significant changes must be made in the classification of the family as given in my paper (Clench, 1955). The tribe Deloneurini must be deleted completely and *Deloneura* removed from the Liphyrinae to the Epitolinae; the subfamily Spalginae should be reduced to a tribe within the subfamily Gerydinae. Each of these changes is discussed more fully below under the subfamily concerned.

The Liphyridae are preeminently paleotropical in distribution, though a few members reach the palearctic region and one the nearctic. Two of the three subfamilies are African and regional. The Poritiinae is exclusively Indo-Malayan.

Key to the subfamilies of the Liphyridae

1. Male fore tarsus fully formed; both sexes with first tarsal segment of hindleg shorter than the remaining tarsal segments together ..... Liphyrinae
   Male fore tarsus fused to a single clawless segment; both sexes with first tarsal segment of hindleg longer than remaining tarsal segments 2
2. Fused male fore tarsus apically coming to a ventrally curved point; shaft segments of antenna about 1.5 times as long as an average club segment. Gerydinae
   Fused male fore tarsus blunt-tipped; shaft segments of antenna about twice as long as an average club segment ..... Poritiinae (extralimital)

Subfamily Liphyrinae

Legs subcylindrical; male fore tarsus fully formed like that of female; hindleg with first tarsal segment shorter than the remaining tarsal segments together.

My inclusion (Clench, 1955: 266) in this subfamily of the South African *Deloneura* as a distinct tribe, was based solely on information derived from various published sources and this information was in part incorrect. My placement, therefore, was quite erroneous. M. Stempffer (*in litt.*) has informed me that the male fore tarsi are not fully formed (As Trimen (*e.g.* in Trimen and Bowker, 1887 [1887-1889] 2: 225) and Murray (1935: 58) give, with a question: Aurivillius (1920 [1908-1925]: 346), however, correctly describes them, but are fused to a single segment. He adds that the male genitalia

are similar to those of *Epitola*. This, coupled with Trimen's other descriptive remarks, particularly the much swollen second palpal segment, the short, thick, smooth legs, and Aurivillius' statement that the male has an androconial patch on vein 2A, are sufficient to place it with some confidence in the Liptenidae, tribe Epitolini, even without information of more definitive structures and in spite of certain contradictions (see Epitolini).

The subfamily consists of only two tribes. It is entirely Old World in occurrence and, with the exception of the Indo-Australian *Liphyra,* entirely African.

Key to the Tribes of Liphyrinae

1. Forewing with five radial veins ..... Liphyrini
   Forewing with only four radials ..... Lachnocnemini

Tribe LIPHYRINI

Forewing with five radial veins; the legs are smoothly scaled with some fringes of coarser scaling only.

Genus **ASLAUGA** Kirby

The center of distribution of this genus appears to be the Guinean rain forest, particularly in Cameroon. One species, however, occurs as far east and south as Kenya and Natal. Bethune-Baker (1925) has reviewed *Aslauga* and life history information is given in Lamborn (1914), Farquharson *et al.* and Jackson (1937). The larvae are onisciform with a leathery cuticle produced laterally down to the substrate, much as in *Euliphyra.* They are carnivorous and feed on coccids or membracids, being attended by ants.

Aslauga vininga Hewitson

Liphyra vininga Hewitson, 1875: 183; 1878 [1862-1878]: 35; pl. 5b, fig. 3. *Aslauga vininga:* Lamborn et al., 1914: 446, 449. Aurivillius, 1920 [1908-1925]: 342 (the female figured, pl. 64b, as *vininga* is actually the female of *lamborni*). Schultze, 1923: 1192. Bethune-Baker, 1925: 216; figs. (synonyms: *marginata* Plötz, *marginalis* Kirby, *subfulvida* Holland, *leonae* Aurivillius).

=*Deloneura marginata* Plötz, 1880: 204.

=*Aslauga marginalis* Kirby, 1890: 261.

=*Epitola subfulvida* Holland, 1890a: 423.
=*Aslauga leonae* Aurivillius, 1920 [1908-1925]: 343; pl. 64c (in part). Jackson, 1962: 156 (=*subfulvida* Holland).

Though the most abundant species of the genus, and probably the most widely distributed (from Sierra Leone through Nigeria to Gabon), *vininga* is actually far from common and appears to be quite local as well. According to Fox's observations it is crepuscular in habit, a fact which may explain, at least in part, its apparent rarity.

Bethune-Baker (*in* Lamborn *et al.*, 1914: 499) has remarked on the different appearance of Nigerian females as compared with females from Sierra Leone, the former being darker orange above than are the latter. Our Liberian females are noticeably darker orange above than our females from Gabon — about the reverse, geographically, of the situation described by Bethune-Baker. This author, however, was comparing fresh Nigerian material with older, possibly much older, Sierra Leone specimens, and our Liberian material is some fifty years fresher than the specimens from Gabon. It seems likely that the color difference is the result of age rather than of geography.

Liberia: Harbel, 1 ♂, 1 ♀, I, 2 ♂, VII, 2 ♂, 1 ♀, VIII, 1 ♀, IX, 2 ♂, X, 1 ♂, XI, 1 ♀, XII; Wanau Forest, 2 ♂, X; Ganta, 1 ♂, IX (all Fox).

Genus **EULIPHYRA** Holland

This curious genus is confined to West Africa but a near relative, *Liphyra* Westwood, occurs in the Indo-Australian region. Although the two genera are undoubtedly distinct, they are nonetheless similar in many ways, especially in their remarkable life histories (see Lamborn *et al.*, 1914; Bethune-Baker, 1925).

The two known species of *Euliphyra* are both found in Liberia, and are as uncommon there as elsewhere.

Euliphyra leucyania Hewitson

Liphyra leucyania Hewitson, 1874c: 355; 1878 [1862-1878] supplement: 34; pl. 5b, fig. 2 [♂ only; ♀ described (and fig. 1) = ♀ *E. mirifica* Holland (see below); described as from Old Calabar, but may have been from Sierra Leone (see Bethune-Baker and Eltringham, *in* Lamborn *et al.*, 1914: 504)]. *Euliphyra leucyania:* Bethune-Baker and Eltringham, *in* Lamborn *et al.*, 1914: 504 ff., pl. 27, figs. 1-4. Aurivillius, 1920 [1908-1925]: 344; pl. 64c. Bethune-Baker, 1925: 204.

=*Euliphyra sjöstedti* Aurivillius, 1895b: 204; fig. 13 (♀).

For some strange reason Bethune-Baker and Eltringham (*in* Lamborn, 1914: 506) and later Bethune-Baker alone (1925: 204) referred Aurivillius' name *sjöstedti* to *E. mirifica* as a subspecies, in which they have been followed by Stempffer (1957a: 24). Aurivillius' figure (1895b) is unmistakable and he later (1920) correctly synonymized it himself.

This species ranges possibly from Sierra Leone (see above) to Nigeria, south through Cameroon and Gabon, at least to the lower Congo River (near Leopoldville, in C. M.). It has not previously been reported from Liberia.

Liberia: Bigtown, 1 ♀ (Naysmith); Harbel, 1 ♂, I, 1 ♂, IV (Fox).

Euliphyra mirifica Holland

Liphyra leucyania Hewitson, 1874c: 355 (♀, not ♂); 1878 [1862-1878]: 35; pl. 5b, fig. 1.

Euliphyra mirifica Holland, 1890a: 423. Grose-Smith and Kirby, 1893 [1887-1902] (XX): 89; figs. 11, 12. Lamborn *et al.*, 1914: 450 ff., 505 ff., 509 ff.; pl. 27, figs. 5-11, pl. 28, figs. 1-10. Aurivillius, 1920 [1908-1925]: 344; pl. 65c. Bethune-Baker, 1925: 203 ff.

Euliphyra hewitsoni Aurivillius, 1898: 286 (new name for ♀ *"leucyania"* Hewitson).

The species ranges possibly from Sierra Leone (see Lamborn *et al.*, 1914: 504) through Ghana to Nigeria and south through Cameroon and Gabon to Angola. It is newly recorded from Liberia.

Liberia: Harbel, 1 ♂, X (Fox).

Tribe LACHNOCNEMINI

Forewing with only four radial veins; the legs are densely covered with long woolly hair. Only a single genus is known.

Genus **LACHNOCNEMA** Trimen

This curious and rather isolated genus occurs throughout the Ethiopian region. The species are few and are rather difficult to separate though females are more readily distinguished than males. A revision of the genus is badly needed.

Lamborn (1914), Farquharson *et al.* (1922), Jackson (1937) and Seth-Smith (1938) have all given life history information. The larva is not lymantrioid, but has some long hair dorsally. It feeds on young membracids and jassids or on their secretions.

Lachnocnema bibulus Fabricius

Hesperia bibulus Fabricius, 1793 [1793-1794]: 307. *Lachnocnema bibulus:* Trimen and Bowker, 1887 [1887-1889] 2: 235. Aurivillius, 1922 [1908-1925]: 363. de Fleury, 1926: 140 (Guinea; as *"brima* form *bibulus"*). Stempffer and Bennett, 1956: 507.

This species flies over most of Africa south of the Sahara.
Liberia: Kpain, IX, X, XII (Stempffer and Bennett, 1956).

Lachnocnema brimo Karsch

Lachnocnema brimo Karsch, 1893: 217. H. H. Druce, 1910a: 9, 24; pl. 3, figs. 7, 7a (photo of type). Aurivillius, 1922 [1908-1925]: 364. de Fleury, 1926: 140 (Guinea). Seth-Smith, 1938: 145 (Ghana).

This species may be distinguished from *bibulus* by (1) the tiny pale patch in M_1-M_2-M_3 of forewing above in the female, the hindwing being without a distinct pale patch; and (2) in both sexes below on the forewing the three postmedian quadrate spots just beyond the cell-end form in *brimo* a series regularly increasing in thickness posteriorly and with their distal edges progressively offset basad; while in *bibulus,* as in most other members of the genus, the posterior two of these spots are subequal in size and have their distal edges in line, both together strongly offset basad from the nearly isolated first spot. The regularity of the median diagonal band of the hindwing below, used by Aurivillius (1922) in his key, is far too variable to be of much value.

The species was described from Togo and has been recorded also from Republic of Guinea, Ghana, Nigeria (Aurivillius, 1922) and Ethiopia (Carpenter, 1935: 390). There are specimens in Carnegie Museum from Cameroon and Gabon. *L. brimo* has not hitherto been recorded from Liberia.

Liberia: Fisherman's Lake, 1 ♂, V (Thomas; C. M.); Harbel, 1 ♀, II (Fox).

Subfamily Gerydinae

This subfamily is distinguished by the following combination of characters: legs subcylindrical or in some cases distally compressed laterally; male fore tarsus fused to a single segment, its tip produced to a ventrally curved point, the segment sparsely to moderately spinose ventrally, but not distad of macrotrichial origins. Hindleg with first tarsal segment subequal to or much longer than remaining tarsal segments together.

I now believe that the "Spalginae" as treated in my classification of the Lycaenae (Clench, 1955: 267) is not sufficiently distinct from the Gerydinae to warrant separation at subfamily level and accordingly I place it here as a tribe within the subfamily Gerydinae.

All known larvae of the Gerydinae are carnivorous, feeding on coccids, membracids and jassids. They are roughly onisciform and may be provided with some longish dorsal hair.

The subfamily, with the single exception of the North American *Feniseca,* is entirely Old World in distribution.

Key to the Tribes of Gerydinae

1. Hindleg with first tarsal segment two to over three times as long as remaining tarsal segments together; usually all legs distally compressed and blade-like ..... Gerydini

   Hindleg with first tarsal segment subequal to, or only slightly longer than, remaining tarsal segments; legs never compressed ..... Spalgini

Tribe GERYDINI

The macrotrichia of the fused male fore tarsus are short, not reaching the tip of the tarsus; hind tarsus with first segment twice to over three times as long as remaining tarsal segments together. Most members have the legs distally compressed laterally, and in nearly all genera the palpi are asymmetrical in length, one palpus (usually, though not always, the left) being markedly shorter than the other. The genitalia of *Gerydus* and *Megalopalpus,* at least, show a remarkable hypertrophy of the uncus, which in these genera, particularly *Gerydus,* entirely dominates the genital capsule. In *Megalopalpus* the seventh and eighth abdominal tergites are specialized by the development, at least in the male, of a pair of lateral anterior apophyses, those of the seventh being rather short and blade-like, while those of the eighth are long rods, apically spatulate, extending nearly the full length of the preceding segment. *Megalopalpus* alone in the tribe has a humeral vein on the hindwing.

The distributional center of the tribe is in the East Indian region but the genus *Megalopalpus* is confined to Africa.

Genus **MEGALOPALPUS** Röber

This small genus is systematically isolated and its African species

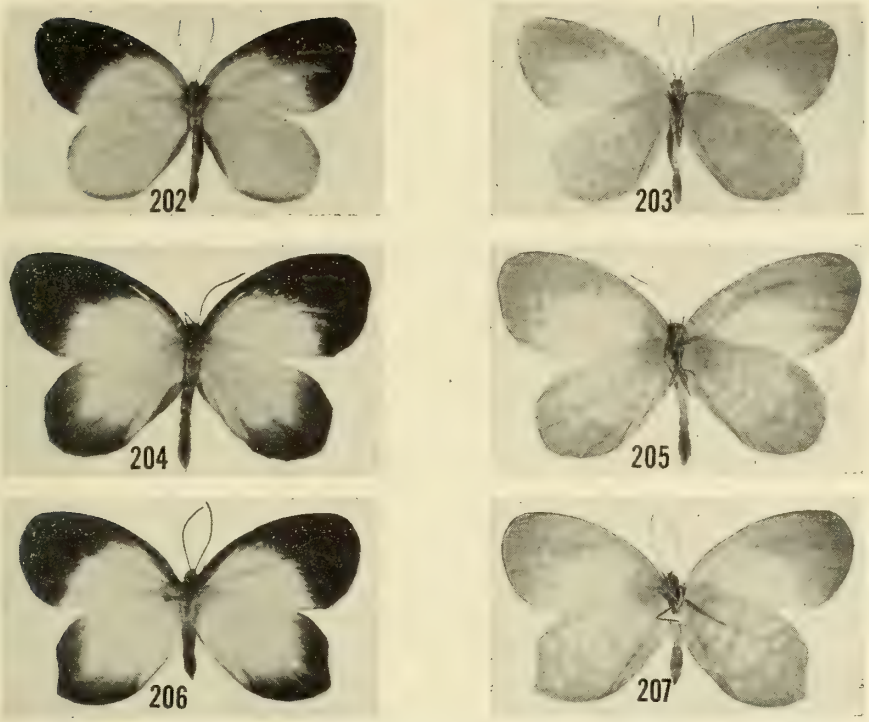
Fig. 198, *Megalopalpus metaleucus* Karsch (form?), Wanau Forest, Liberia, female upperside (x 1.3). Fig. 199, same specimen, underside. Fig. 200, *Megalopalpus metaleucus* Karsch (usual form), Efulen, Cameroon, female upperside (x 1.3). Fig. 201, same specimen, underside.

are in need of revision. Life history information is given by Lamborn (1914) and Farquharson (1922), the former in particular providing a wealth of information. Two species are known to occur in Liberia.

Megalopalpus metaleucus Karsch (form ?) (Figs. 198, 199; compare also 200, 201)

Allotinus zymna: Grose-Smith and Kirby, 1891 [1887-1902] (XII): 49; figs. 1, 2 (not *zymna* Doubleday, Westwood and Hewitson, 1852).
=*Megalopalpus metaleucus* Karsch, 1893: 217. Aurivillius, 1922 [1908-1925]: 362. Stempffer and Bennett, 1956: 507.

The single male at hand (figs. 198, 199) is atypical in that the apical fuscous of the forewing above lies entirely distad of the cell and the costa is white save for a narrow linear fuscous edging; the hindwing is practically immaculate. In these traits it is closely similar to a specimen from Rio Muni and quite different from several specimens from southern Cameroon (figs. 200, 201) in which the forewing apical fuscous enters the cell, the costa is broadly fuscous as far in as the costal cell vein and the hindwing termen, below M_2, is edged with fuscous.



Figs. 202-207, various forms of *Megalopalpus zymna* Doubleday, Westwood and Hewitson. Fig. 202, form (1), Metet, Cameroon, male upperside (x 1.4). Fig. 203, same specimen, underside. Fig. 204, form (2), Talaguga, Gabon, male upperside (x 1.4). Fig. 205, same specimen, underside. Fig. 206, form (2), Talaguga, Gabon, female upperside (x 1.3). Fig. 207, same specimen, underside.

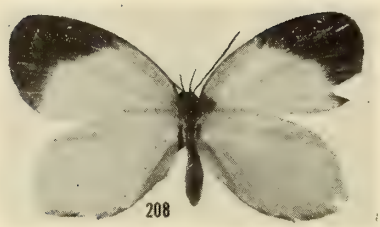
I do not know what to make of these specimens. Are they simply extremes of normal variability? Do they represent a dimorphic form? Is it a distinct species? Material is insufficient to provide the answers and in this genus male genitalia do not help.

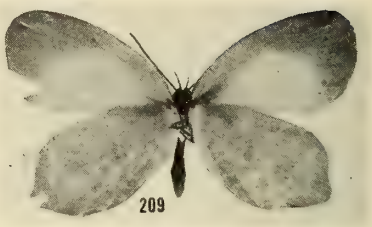
Liberia: Kpain, II, VII-X; Davoyi, I; Sanniquellie, V (Stempffer and Bennett, 1956); Wanau Forest 1 ♂, II (Fox).

Megalopalpus zymna Doubleday, Westwood and Hewitson (form ?)
(Figs. 208, 209; compare also 202-207, 210-213)

Pentila zymna Doubleday, Westwood and Hewitson, 1852 [1846-1852]: 503, 504; pl. 76, fig. 7 (as *Miletus zymna*). *Megalopalpus zymna:* Aurivillius, 1922 [1908-1925]: 362.

=*Megalopalpus simplex* Röber, 1886: 51 ("Borneo" in error). *Allotinus similis* Kirby, 1890: 262: Grose-Smith and Kirby, 1891 [1887-1902] (XII): 49; figs. 3, 4.





Figs. 208, 209, form (3) of *Megalopalpus zymna* Doubleday, Westwood and Hewitson. Fig. 208, Wanau Forest, Liberia, female upperside (x 1.4). Fig. 209, same specimen, underside.

The species ranges widely — from Liberia (here reported for the first time) eastward to the eastern Congo and Uganda, south to Gabon.

Liberia: Wanau Forest, 1 ♀, III (Fox).

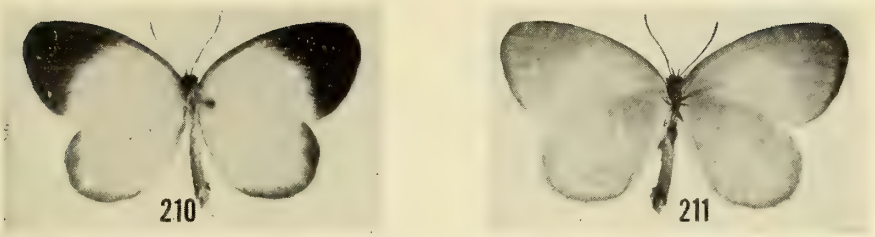
In the rather extensive material of this species at hand four distinct forms can be recognized.

Form (1) (figs. 202, 203). Forewing apical fuscous extending into distal end of cell; white in base of forewing cell M_3-Cu_1 small, hardly longer than wide; costa broadly infuscate, often as far in as costal cell vein; hindwing termen linearly edged with fuscous. Southern Cameroon (2 ♂); Gabon (1 ♂, 1 ♀).

Form (2) (figs. 204-207). Forewing apical fuscous extending into distal end of cell; white in base of cell M_3-Cu_1 small, hardly longer than wide; costa broadly fuscous, inward to costal cell vein; hindwing termen very broadly fuscous, in males frequently about half-way to cell-end. Gabon (series of both sexes); Rio Muni (1 ♂).

Form (3) (figs. 208, 209). Forewing fuscous entirely beyond cell; white in base of forewing cell M_3-Cu_1 considerably longer than wide (nearly half the cell length); costa white save for a linear fuscous edge; hindwing termen with fuscous much reduced (in one specimen a linear edging below M_2; the other similar but also with a terminal fuscous spot in Rs-M_1). Liberia (data above) (1 ♀); Nigeria (1 ♀).

Form (4) (figs. 210-213). Forewing fuscous entirely beyond cell, though it may touch distal end; white in base of forewing cell M_3-Cu_1 usually considerably longer than wide, though rarely as long as half the cell-length; costa rather heavily fuscous, though not reaching costal cell-vein; hindwing with fuscous border moderately thick (usually about 2 mm.). Southern Cameroon (various localities, long series of both sexes); Fernando Po (1 ♂); Gabon (2 ♂, 1 ♀).



Figs. 210, 211, form (4) of *Megalopalpus zymna* Doubleday, Westwood and Hewitson. Fig. 210, Batanga, Cameroon, male upperside (x 1.4). Fig. 211, same specimen, underside.

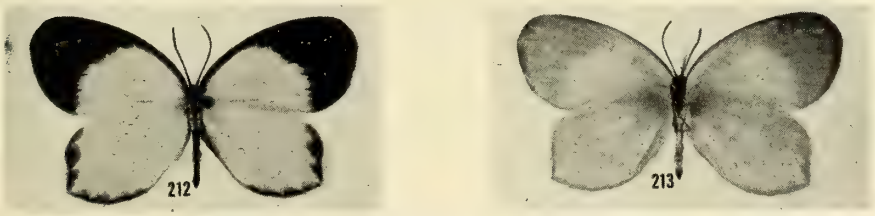
The names *simplex* Röber and *similis* Kirby both appear to refer to form (4). Aurivillius' subspecies *pallida,* at hand from the Kivu District of the Congo and from western Uganda, also seems most closely allied to form (4). From the figure *zymna* itself may refer to form (4) or form (2).

As with the variant of *metaleucus* discussed above, the status of these forms is uncertain. It seems unlikely that they represent mere individual variants, in view of the series, the extreme rarity of intermediates, and the strong correlation with geography. They may possibly represent closely related species and it is indeed unfortunate that the genitalia in this genus are so unvarying (even between species as distinct as *metaleucus* and *zymna*).

Tribe Spalgini

The macrotrichia of the fused male fore tarsus are relatively long, usually extending beyond the tip of the tarsus; hind tarsus with first segment length subequal to or only slightly exceeding the combined length of remaining tarsal segments. Legs are always subcylindrical.

The onisciform larvae are entomophagous, feeding on aphids and coccids. The striking resemblance of the pupa to the head of a man or a monkey is well known.



Figs. 212, 213, form (4) of *Megalopalpus zymna* Doubleday, Westwood and Hewitson. Fig. 212, Batanga, Cameroon, female upperside (x 1.5). Fig. 213, same specimen, underside.

The tribe is thinly but widely distributed, occurring in eastern North America, eastern Asia, Indo-Australia and Africa.

Genus **SPALGIS** Moore

Of the three African species only one (*lemolea*) is well known and all the available regional life history information on the genus relates to it. Holland (1892), Lamborn (1914) and Jackson (1937) all provide data and the latter two give further references.

Spalgis lemolea H. H. Druce (subspecies ?)

Spalgis lemolea H. H. Druce, 1890: 26 (Lagos, Nigeria); 1892: 65. Aurivillius, 1923 [1908-1925]: 433.
=*Spalgis latimarginata* E. M. Sharpe, 1890b: 347 (Senegambia).
=*Spalgis s-signata* Holland, 1890a: 426 (Kangwé, Gabon).

A certain amount of geographic variability exists, as Carpenter (1935: 393) notes and as material at hand indicates, though there is not enough here to work it out properly. It is relevant that a single male from Sierra Leone and both Liberian females differ considerably from specimens from Gabon, Katanga and Uganda. In the male the terminal border of the forewing is thicker and the hindwing costa is broadly infuscate from base to apex (leaving, however, a narrow edge of white on the costa itself); in the female the terminal borders of both wings are thicker (on the hindwing perhaps twice as thick) and one of the two females has the hindwing costa broadly infuscate from base to apex where it fuses with the terminal fuscous.

I have seen no topotypical *lemolea* and Druce's description is inadequate to tell whether Nigerian *lemolea* agrees more with Gabonese or with Sierra Leone-Liberian specimens.

The species record is new for Liberia. It ranges from Gambia and Sierra Leone east through Nigeria to Uganda, south to the Rhodesias and the Katanga, and north into Abyssinia (Carpenter, 1935: 393).

Liberia: Wanau Forest, 1 ♀, II; Ganta, 1 ♀, IX (Fox).

Druce described a second species (see below) at the same time as *lemolea*, calling it *pilos*. It was based only on the female and its chief points of distinction are given as (1), pale straw ground color (instead of the white of *lemolea*) and (2), the infuscate hindwing costa above. The straw colored ground could well result from staining, and the

fuscous hindwing costa is duplicated in one of the above-described Liberian *lemolea* females. Without being able to affirm it, I am nonetheless inclined to believe that *pilos* is conspecific with *lemolea,* though retainable (it has priority over *latimarginata*) for the Upper Guinea subspecies of *lemolea* should it prove worthy of a name.

[**Spalgis pilos** H. H. Druce]

Spalgis pilos H. H. Druce, 1890: 27 (Gambia). Aurivillius, 1923 [1908-1925]: 433.

Though described along with *lemolea,* unlike the latter it has since remained an unknown entity. Aurivillius suspected (1923) that it might be merely a variety of *lemolea* (see remarks above). It has not been taken in Liberia.

Liphyridae — position uncertain

Genus **EGUMBIA** Bethune-Baker

I have not seen this monotypic genus. According to Stempffer (1957a and personal communication) the male has fully formed fore tarsi; accordingly he would include it in a group corresponding to my Liphyridae, tribe Liphyrini. Hitherto it has been placed close to *Epitola* (Liptenidae). More recently Romieux (1937: 120) has redescribed the genus under the name *Euliphyrodes.*

[**Egumbia ernesti** Karsch]

Epitola ernesti Karsch, 1895: 290. Aurivillius, 1898: 294 (with query as to genus); 1920 [1908-1925]: 359; pl. 65a. *Egumbia ernesti:* Stempffer, 1957a: 25; figs. 18, 19.
=*Egumbia catori* Bethune-Baker, 1924: 135. Stempffer, 1954e: 14 (=*Euliphyrodes katangana*).
=*Euliphyrodes katangana* Romieux, 1937: 123; figs.

The species was first described from Togo, later (as *catori*) from northern Nigeria, then (*katangana*) from Katanga. Stempffer (1954e) has recorded it from Uganda, along with some interesting remarks on its habits. No Liberian records are known, but the species, apparently exceedingly rare and local, could well occur there.

Family Lycaenidae, s. s.

Middle and hind tibiae each with a single pair of spurs (lacking in a single non-African genus); tarsal claw with endodont absent, slight, or of usual size (about half

as long as terminal claw), rarely fully as long as terminal claw (as in *Aphnaeus*, which resemble Pieridae in this respect). Male fore tarsus usually (in Africa always, so far as I know) fused to a single clawless segment, ventrally spinose, the tip either blunt or produced to a ventrally curved point.

Classification within the family is, as yet, very uncertain and will require much study to unravel satisfactorily. I follow here, for convenience, the general arrangement adopted by Stempffer (see especially 1957a), but with a few modifications.

The family is world-wide and includes the familiar blues, coppers and hairstreaks as well as many others. Life histories are known for many species in Africa (see especially Jackson, 1937), as elsewhere, though many more still await elucidation. Association of larvae with ants is prevalent almost everywhere and often rather elaborate (see Stempffer, 1957a: 15). Larvae show a marked but not exclusive preference for Luguminosae of many kinds, a fact undoubtedly contributory to the large number of species and their occurrence in such a diversity of ecological conditions.

Subfamily THECLINAE

Genus **DEUDORIX** Hewitson

This large paleotropical genus is highly developed and much diversified in Africa, though also well represented in the Indo-Australian region (as far as Australia and Samoa). Recent authors are generally in agreement that the various groups into which *Deudorix* has been divided are of no more than subgeneric worth, and they are so treated here. The primary evidence for this is the great uniformity in structure, particularly of the male genitalia. Indeed, so conservative are these structures that they habitually fail to be of service where they are most needed — in the discrimination of closely related species. Such "problem" groups of species occur, too, rather more frequently than usual in comparable genera, as for example the *D.* (*Hypomyrina*) *nomenia* complex and *D.* (*Hypokopelates*) *eleala* and its relatives.

Life histories, for such a structurally homogeneous group, are remarkably diverse. Data may be found in Lamborn (1914), Farquharson *et al.* (1922), Murray (1935), Jackson (1937), Seth-Smith (1938) and Stempffer (1948: 188).

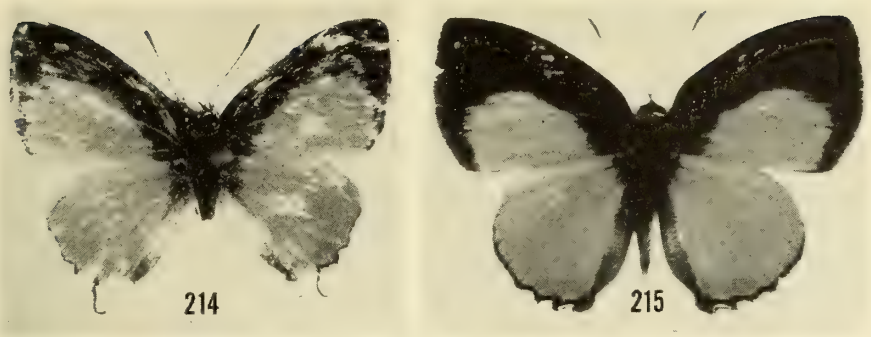


Fig. 214, *Deudorix* (*Hypomyrina*) *acares* Karsch (?), St. Paul R. at Zorzor Rd., Liberia, male upperside (x 2.2). Fig. 215, *Deudorix* (*Hypomyrina*) *nomenia* Hewitson, Metet, Cameroon, male upperside (tails missing) (x 2.2).

Deudorix (Hypomyrina) acares Karsch (?) (Fig. 214; compare also fig. 215)

Deudorix acares Karsch, 1893: 219. H. H. Druce, 1910a: 13, 28; pl. 5, figs. 3, 3a (photo of type). Aurivillius, 1922 [1908-1925]: 365.
=? *Deudorix nomenia* (Hewitson): Staudinger, 1891: 156. Gabriel, 1939: 74. Stempffer and Bennett, 1956: 507.

The subgenus *Hypomyrina* is a complex of closely related forms that most authors have been content to leave under one or a very few names, generally expressing the opinion that all probably belong to but one species. Comparison of the male genitalia, identical throughout, sheds no light whatever on the problem.

It is my suspicion — and in the circumstances it is no more than that — that *Hypomyrina* comprises a number of species, perhaps half a dozen or so. Variation among males at hand, mostly from Cameroon and Gabon, involves such characters as wing shape (particularly the convexity of the forewing costa and termen); costad extent of the discal orange; configuration of the forewing fuscous terminal border; distinctness of the postmedian line below; structural details of the tornal pattern elements below. Many of these or similar traits are of demonstrable specific worth in other *Deudorix*.

Staudinger (1891) distinguished two sympatric species in Sierra Leone, one of which he called *nomenia,* naming the other as new (*nomion,* see below). The present male is not *nomion* and not *nomenia,* but it does look much like *nomenia* and may be the same species that Staudinger so identified, and Stempffer and Bennett (1956) as well. Karsch suspected his single type of *acares* to be a female,

but on grounds we now know to be invalid. Druce's (1910) photograph of this type is inconclusive as to its sex, but shows a *nomenia*-like form with extensive forewing discal fulvous. If a male, it is of a different species, presumably, than the Liberian male at hand; if, however, it is a female, then it could well be that sex of the Liberian male. I adopt the latter possibility with much hesitation but as the simplest course since a decision of some kind must be made.

The single Liberian male (fig. 214) shows the following characters: size small (forewing length 12.5 mm.); forewing with costa and termen much less convex than in *nomenia* (fig. 215); orange area extensive, reaching just above M_3 and invading the postero-distal area of the discal cell; terminal fuscous slender and tapering regularly to a point at tornus. The specimen is too rubbed to be sure of any features of the under surface pattern.

Gabriel (1939) should be consulted for further discussion of the group. A male corresponding very closely with his "subspecies" *fournierae* is at hand from Gabon. In line with the remarks made above, I should be inclined to accord *fournierae* specific rank and to consider the Gabon specimen as a western representative.

Liberia: Kpain, ♂, IV (Stempffer and Bennett, 1956); St. Paul River at Zorzor Road, 1 ♂, III (Fox).

[Deudorix (Hypomyrina) nomion Staudinger]

Myrina nomenia var.: Kirby, 1878, *in* Hewitson [1862-1878]: 26.
Myrina nomion Staudinger, 1891: 156; pl. 1, fig. 11. *Deudorix nomion:* Aurivillius, 1922 [1908-1925]: 365; pl. 65i.

This species was described from Sierra Leone and therefore possibly may occur in Liberia, though no specimens from there are known. Gabriel (1939: 73) considered *nomion* to be only a form of *nomenia* (apparently because of similarity of genitalia and widespread sympatry) and records it from Uganda.

Deudorix (Kopelates) virgata H. H. Druce

Kopelates virgata H. H. Druce, 1891: 365; 1892: 66. Staudinger, 1892b: 223. *Deudorix virgata:* Aurivillius, 1922 [1908-1925]: 366; pl. 65k; 1923 [1908-1925]: 1215.
=*Hypolycaena gracilis* Staudinger, 1891: 152. *Actis gracilis:* Peters, 1952: 102.

Peters, who has ignored the principle of priority on more than one occasion, has elected to replace *Kopelates* (H. H. Druce, 1891) by

Actis (Karsch, 1895), and *virgata* (H. H. Druce, April, 1891) by *gracilis* (Staudinger, July, 1891). Relevant discussion may be found in Karsch (1895: 26 ff.), Aurivillius (1923), H. H. Druce (1892) and Staudinger (1892b).

The species ranges from Sierra Leone (Druce, Staudinger) to Cameroon and western Congo (Aurivillius, 1923) and has not previously been recorded from Liberia. I can see no indication of racial differences between Liberian and Cameroon specimens.

Liberia: Ganta, 1 ♂, III, 1 ♂, VI (Fox).

Deudorix (Hypokopelates) eleala Hewitson

Hypolycaena eleala Hewitson, 1865 [1862-1878]: 52; pl. 23, figs. 25-27. *Iolaus eleala:* Karsch, 1893: 222. *Deudorix eleala:* Aurivillius, 1895b: 209. 1898: 307; 1922 [1908-1925]: 368; pl. 66a. Stempffer, 1952a: 185.

The species appears to be confined more or less to Upper Guinea. Hewitson's types came from Old Calabar; Karsch (1893) and Stempffer (1952a) have both recorded it from Togo. References to wider distributions (Aurivillius, 1922; Stempffer, 1952) seem to be based in part on other species.

Hewitson's figure of the female shows it to be brown above, the hindwing with a broad subterminal white band intersected by narrowly brown veins. Such a female is also described by Karsch and, following both Hewitson and Karsch, by Aurivillius (1898). The Liberian females at hand are in accord with this.

Aurivillius (in Seitz) figured a female that agrees with the above but in the text he described quite a different female: brown above with basal half of forewing and most of hindwing gray-blue. Such females are before me in series from Cameroon and Gabon, along with associated males. To judge from variation in both sexes more than one species seems to be involved, though I have not been able to segregate them to my satisfaction. M. Stempffer (personal communication) informs me that he has encountered similar trouble. What name or names should be applied to these specimens is an open question (*ituri* Bethune-Baker and *kallipygos* Birket-Smith are among them), but the only point relevant here is that they are not *eleala*.

Liberia: Harbel, 1 ♀, II, Wanau Forest, 1 ♀, III (Fox).

Deudorix (Hypokopelates) petersi Stempffer and Bennett

Deudorix (*Hypokopelates*) *petersi* Stempffer and Bennett, 1956: 507; figs. 3, 4.

The specimen at hand agrees closely with the original description save in the following presumably minor particulars: the frons is not black but white with two sublateral black lines dorsally, becoming black only on vertex; the blue-green above is less dense, appearing more as a heavy sprinkling of blue-green scales, though in the same pattern. On the hindwing the androconial patch above the cell is whitish with no yellow tint. On the hindwing below the points of the "W" formed by the postmedian line at Cu_2 and 2A do not touch the subterminal line but are narrowly separated from it by white.

Known so far only from Liberia: Kpain, 1 ♂ III (Stempffer and Bennett, 1956); Harbel, 1 ♂, III (Fox).

[**Deudorix (Hypokopelates) otraeda** Hewitson]

Myrina otraeda Hewitson, 1863 [1862-1878]: 29; pl. 15, fig. 34. *Deudorix otraeda:* Aurivillius, 1898: 307; 1922 [1908-1925]: 368; pl. 66a.
=*Myrina genuba* Hewitson, 1878 [1862-1878]: 25; pl. 3b, figs. 103-104.

Hewitson's type of *otraeda* came from Sierra Leone and that of *genuba* from Cameroon. Specimens are at hand from Cameroon and Aurivillius (1922) records it from the Congo. It has not so far been taken in Liberia.

[**Deudorix (Hypokopelates) anetta** Talbot]

Deudorix (*Hypokopelates*) *anetia anetta* Talbot, 1935: 76; pl. 1, fig. 12. *Deudorix* (*Hypokopelates*) *anetta:* Stempffer, 1961: 52.

Stempffer records this species from Togo. It should be looked for in Liberia but so far has not been found there.

[**Deudorix (Hypokopelates) leonina** Bethune-Baker]

Deudorix leonina Bethune-Baker, 1904: 231. Aurivillius, 1922 [1908-1925]: 368. *Deudorix* (*Hypokopelates*) *leonina:* Stempffer, 1951: 119.

The species was described from Sierra Leone and Stempffer (1951) reports it from the eastern Congo. It has not as yet been taken in Liberia.

[**Deudorix (Pilodeudorix) catori** Bethune-Baker]

Deudorix catori Bethune-Baker, 1903: 331. Aurivillius, 1921 [1908-1925]: 372.

This species was described from Sierra Leone and may possibly occur in Liberia, though records are as yet lacking.

Deudorix (Pilodeudorix) camerona camerona Plötz

Sithon camerona Plötz, 1880: 201. *Deudorix camerona:* Aurivillius, 1898: 307 (= *barbatus,* =*nobilis*); 1921 [1908-1925]: 370; pl. 65k. *Deudorix* (*Pilodeudorix*) *camerona:* Farquharson *et al.,* 1922: 381, 464 (life history note; descr. of ♀). Stempffer and Bennett, 1956: 510.

=*Pilodeudorix barbatus* H. H. Druce, 1891: 366. Staudinger, 1892a: 223 (=*nobilis*). H. H. Druce, 1892: 65 (=*nobilis*).

=*Hypolycaena nobilis* Staudinger, 1891: 149; pl. 1, fig. 8.

The species ranges from Sierra Leone to Uganda, south to Gabon and Katanga.

Liberia: Kpain, III (Stempffer and Bennett, 1956); Harbel, 1 ♀, I, 1 ♂, V; Yendamalahoun, 1 ♂, IV; Ganta, 1 ♂, VII, 2 ♂, VIII; Zorzor, 1 ♂, 1 ♀, XI (all Fox).

Deudorix (Pilodeudorix) diyllus diyllus Hewitson

Deudorix diyllus Hewitson, 1878 [1862-1878]: 32; pl. 5a, figs. 70, 71. Aurivillius, 1921 [1908-1925]: 370; pl. 66a, b. *Deudorix* (*Pilodeudorix*) *diyllus:* Farquharson *et al.,* 1922: 381, 464, 484 (as *Pilodeudorix* —); pl. 13, figs. 8, 14.

With the exception of the Farquharson record from Nigeria, this species has been hitherto known only from Sierra Leone. The single Liberian male agrees as well as can be expected with Hewitson's figures and description and I believe the determination to be correct. It is, however, extremely close to a male from southern Cameroon that compares very well with *D. congoana* Aurivillius (1923: 1218; pl. 50, fig. 8). Both have an ochreous orange hair pencil on the forewing inner margin below and both lack the long tuft of black hairs on vein 1A of the hindwing above (characteristic of *camerona*). *D. congoana* appears to have the blue areas above slightly brighter and more lavender in tone, and somewhat more extensive. On the under side of the hindwing of *congoana* there is a tinge of orange in the postmedian band near the tornus, as Aurivillius notes; this is absent in the Liberian male (and neither described nor depicted by Hewitson). It

appears likely that *congoana* is merely an Equatorial West African subspecies of *diyllus*. Stempffer (1957b: 217) has described a subspecies, *diyllus orientalis*, from Katanga and western Uganda. I have seen no material, but from his description it would seem to be very close to *congoana*.

Liberia: Harbel, 1 ♂, I (Fox).

Deudorix (Pilodeudorix) caerulea caerulea H. H. Druce

Deudorix caerulea H. H. Druce, 1890: 28. Aurivillius, 1921 [1908-1925]: 372; pl. 66c. Hawker-Smith, 1929: 230.

The species has not heretofore been recorded from Liberia. The nominate subspecies ranges from there through Ghana and Haute Volta to Nigeria (type locality, Lagos) and "Adamaua" (Aurivillius). The subspecies *obscurata* Trimen is apparently widely disjunct, ranging from Ethiopia (Carpenter, 1935: 390) south through Kenya and Tanganyika to Portuguese East Africa, Rhodesia (C. M.), Nyasaland (C. M.) and Katanga (C. M.). *Deudorix batikelides* Holland, 1920: 222, described from a female from the vicinity of Mombasa, Kenya, is a synonym (New Synonym). Gabriel (1939: 74) has recorded *coerulea* from the Ruwenzori area of Uganda, but from the other locality records he cites he obviously has not discriminated between the two subspecies and what he had is a question.

Liberia: no further data, 2 ♂, 4 ♀ (Naysmith); 1 ♀ (Good); Fisherman's Lake, 1 ♀, V (Thomas); Harbel, 1 ♀, III (Fox).

Deudorix (Pilodeudorix) zela Hewitson

Hypolycaena zela Hewitson, 1869 [1862-1878] supplement: 14; pl. 5, figs. 41-43. *Deudorix zela:* Aurivillius, 1921 [1908-1925]: 372; pl. 66c. Stempffer, 1954c: 348.

This species was described from Sierra Leone. Stempffer (1954c) adds Senegal, Guinea and Ivory Coast; in Carnegie Museum there are three specimens from southern Cameroon; Mr. T. H. E. Jackson informs me (personal communication) that it occurs also in Uganda. I am also indebted to Mr. Jackson for the information that *zeloides* Butler, heretofore considered a subspecies of *zela*, flies with it in Uganda (Katera, Sango Bay, on the west shore of Lake Victoria) where *zeloides* reaches the northern limit of its range.

Liberia: no further data, 1 ♀ (Good); Harbel, 2 ♂, I, 2 ♂, 1 ♀, II, 1 ♀, IX, 1 ♂, XII, 1 ♀ no date (Fox).

Deudorix (Diopetes) violetta Aurivillius

Deudorix violetta Aurivillius, 1897: 216; 1921 [1908-1925]: 371; pl. 66b (as *deritas*). *Deudorix* (*Diopetes*) *violetta:* Stempffer, [1949]: 78; fig. 2; 1952b: 114. Stempffer and Bennett, 1956: 510.

The species ranges from Sierra Leone through Nigeria to Gabon and Uganda.

Liberia: Kpain, IV (Stempffer and Bennett, 1956).

Deudorix (Diopetes) aurivilliusi Stempffer

Deudorix (*Diopetes*) *aurivilliusi* Stempffer, 1954a: 106; pl. 1, figs. 11, 12, text fig. 1. Stempffer, 1957a: 112.

The species was described from Sierra Leone; Stempffer (1957a) adds Togo; it is here recorded from Liberia for the first time.

Liberia: Zorzor, 1 ♂, XI (Fox).

[**Deudorix (Diopetes) catalla** Karsch]

Diopetes catalla Karsch, 1895: 318. H. H. Druce, 1910a: 11, 26; pl. 4, figs. 3, 3a. *Deudorix catalla:* Aurivillius, 1921 [1908-1925]: 371; pl. 65k. *Deudorix* (*Diopetes*) *catalla:* Stempffer, 1954a: 105.

Aurivillius records this species from Togo to Cameroon, a range which Stempffer extends to eastern Congo (Ituri). In Carnegie Museum there are also specimens from Gabon. The species has not yet been taken in Liberia but may occur there.

[**Deudorix (Diopetes) aucta** Karsch]

Diopetes aucta Karsch, 1895: 318. H. H. Druce, 1910a: 11, 26; pl. 4, figs. 2, 2a. *Deudorix deritas aucta:* Aurivillius, 1921 [1908-1925]: 371. *Deudorix* (*Diopetes*) *aucta:* Stempffer, 1954a: 104.

The species was described from Togo and is so far known only from there. References to other localities (particularly those of H. H. Druce and Aurivillius) apparently all refer to other species.

Deudorix (Virachola) galathea Swainson

Thecla galathea Swainson, 1821 [1821-1822]: pl. 69. *Deudorix galathea:* Aurivillius,

1921 [1908-1925]: 373. *Deudorix* (*Virachola*) *galathea:* Stempffer and Bennett, 1956: 510. Stempffer, 1957a: 115.
? *Deudorix* (*Virachola*) *odana* H. H. Druce: Stempffer, 1957a: 115 (in part?).

Stempffer and Bennett (1956) record *galathea* from Sierra Leone to Cameroon. Since there are no specimens in the Carnegie Museum collection from southern Cameroon, it is possible that the species reaches its eastern limit in the northern and western part of the country, adjacent to Nigeria, thus limiting it effectively to Occidental Africa.

It is strange that there are no females reported especially since Swainson mentioned that both sexes were represented in Haworth's collection, from which he described it. The series at hand is very variable as regards the development of the terminal orange border of the hindwing above, ranging from a thick band through a thin band to complete absence. The last part to disappear is the segment in Cu_1-Cu_2, always slightly larger than the rest.

D. odana H. H. Druce differs (in the male) from *galathea* most obviously in the absence of the terminal orange border of the hindwing above, less strikingly in a somewhat different shade of upper side discal color and a paler, less coppery scent pad on the hindwing above. On the under side they are virtually identical. Both *odana* and *galathea* are unusually susceptible to greasing, and such greasing quite effectively masks the two less obvious discriminating characters, so that a slightly greasy *galathea* lacking the terminal orange border could easily pass for *odana.* I suspect that such a specimen may have been the basis for Stempffer's record (1957a) of *odana* from Sierra Leone. The species is otherwise known only from Nigeria, Cameroon and the Congo.

Liberia: Kpain, II, III; Wanau, IV (Stempffer and Bennett, 1956); Harbel, 6 ♂, I, 3 ♂, II, 4 ♂, III, 5 ♂, IV, 12 ♂, V, 1 ♂, IX, 1 ♂, X, 1 ♂, XII; Zorzor, 4 ♂, XI (all Fox).

Deudorix (Virachola) lorisona lorisona Hewitson

Myrina lorisona Hewitson, 1862 [1862-1878]: 37; pl. 16, figs. 48, 49. *Deudorix lorisona:* Aurivillius, 1921 [1908-1925]: 374; pl. 66d.
=*Virachola bimaculata* Hewitson: Peters, 1952: 103.

As with *Deudorix virgata,* Peters (1952) has chosen here to suspend the law of priority. His synonymizing of *lorisona* and *maculata*

is perfectly correct (at least at species level), but the name *lorisona* has a dozen years' priority and has been in continuous and unquestioned service since its proposal.

The species ranges from Sierra Leone and Liberia eastward to southern Ethiopia, Uganda and Kenya, south to the lower Congo, Katanga and Nyasaland.

Throughout this range a considerable amount of geographic variation occurs, so far not formally recognized. Material at hand is insufficient to undertake such a task properly, though it indicates well the general trends, particularly in conjunction with Stempffer's remarks (1948: 185 ff.).

In western Africa — Liberia, Cameroon, Uganda and perhaps the lower Congo — males are relatively small, the forewing orange spot small, the fuscous hindwing border thick and even, the under side markings dark and contrasty; females have an orange patch on the forewing and a usually smaller, vaguer one on the hindwing, both of which tend to become feebler in Liberia than in Cameroon. Eastern males tend to be relatively large, with large forewing orange spot and thin fuscous border on the hindwing; the under side pattern paler and the colors less in contrast. Females from the east have a large pale forewing patch, but it is bluish (rarely with a few orange scales) and the hindwing is distally mostly pale bluish. Within this broad schema there is further regional variation, and in lower Congo and Katanga specimens are found which are to a certain extent transitional.

Liberia: No further data, 1 ♂, 2 ♀ (Naysmith); Fisherman's Lake, 1 ♂, V (Thomas); Harbel, 3 ♂, I, 3 ♂, II, 3 ♂, III, 4 ♂, IV, 1 ♂, VI, 1 ♂, XII; Wanau Forest, 1 ♂, III (Fox).

Deudorix (Virachola) antalus Hopffer

Dipsas antalus Hopffer, 1855: 641. *Deudorix antalus:* Karsch, 1893: 219. Aurivillius, 1921 [1908-1925]: 375; pl. 66e; 1923 [1908-1925]: 1220. Farquharson *et al.*, 1922: 377. Hawker-Smith, 1929: 230. Jackson, 1937: 211.

=*Lycaena anta* Trimen, 1862b: 402. *Deudorix anta:* Hewitson, 1862 [1862-1878]: 25; pl. 5, figs. 49-51.

The species occurs abundantly over almost the whole of Africa south of the Sahara, including Madagascar and the Comoro Islands. It is, however, strangely absent from all recent regional lists (Stemp-

ffer, 1950, Liberia; 1952c, Nimba; 1952a, Togo and Dahomey; 1954c, Nimba; Stempffer and Bennett, 1956, Liberia). Its flight seems to be limited to the period between February and June.

Liberia: no further data, 2 ♂, 2 ♀ (Naysmith); Cape Palmas, 3 ♂, 1 ♀ (Good); Robert's Field, 1 ♂, VI (Thomas); Harbel, 2 ♂, II, 7 ♂, III, 5 ♂, IV, 2 ♂, V, 1 ♂, VI (Fox).

[**Deudorix (Virachola) livia** Klug]

Lycaena livia Klug, 1834 [1829-1845]: pl. 40, figs. 3-6. *Deudorix livia:* Aurivillius, 1921 [1908-1925]: 375; pl. 66e. Hawker-Smith, 1929: 230. *Virachola livia:* Seth-Smith, 1938: 145.

This savanna and semi-desert species ranges from Arabia and Somaliland south into northern Kenya, westward through Nigeria to Haute Volta, northern Ghana and Senegal. Possibly it will be found in the interior savanna patches in Liberia.

[**Deudorix (Virachola) dinomenes** Grose-Smith]

Deudorix dinomenes Grose-Smith, 1887: 65. Trimen and Bowker, 1889 [1887-1889] 3: 391. Aurivillius, 1898: 309; 1921 [1908-1925]: 375. Murray, 1935: 63. Swanepoel, 1953: 161; pl. 7, figs. 31, 32.

?=*Deudorix licina* [*recte licinia*] (Mabille, 1878): de Fleury, 1926: 140 (Dinguiraye and Boffa, Guinea).

The name *dinomenes* (otherwise a species of southeastern Africa) is included on the basis of Aurivillius' (1898, 1921) record of a specimen from Sierra Leone in the Staudinger collection. The name *licinia,* used by de Fleury, is a synonym of *batikeli* Boisduval, a species endemic on Madagascar (see Stempffer, 1954d: 221), but it resembles *dinomenes* in appearance and may refer to the same species.

With no specimens for comparison and study it is impossible to know to what species these names refer. If it is truly *dinomenes,* then it is a striking disjunct, though of a type with some precedent. Such experienced lepidopterists as Aurivillius and P. I. Lathy (who checked de Fleury's lycaenids) would hardly have thus misdetermined *livia.* Whatever it may be it has not yet been taken in Liberia but may very well occur in the inland savanna patches.

Genus **MYRINA** Fabricius

A few generations ago this genus was highly inclusive, containing long-tailed hairstreaks of many kinds and from most of the Old World. Current use of the name restricts it to a small handful of species found only in Africa. *M. silenus* is fairly common and, in various subspecies, widely distributed. The other species for the most part are rare in collections (except the South African *dermaptera*), probably chiefly due to their strong localization and occurrence in areas seldom visited by collectors.

The larvae feed on various species of fig (*Ficus*) and adults are usually closely associated with their particular tree. Life history information may be found in Lamborn (1914), de Fleury (1926), Murray (1935), Jackson (1937) and Seth-Smith (1938).

Myrina silenus silenus Fabricius

Papilio silenus Fabricius, 1775: 531. *Myrina silenus:* Aurivillius, 1922 [1908-1925]: 578; pl. 68a. de Fleury, 1924: 161; 1926: 141. Hawker-Smith, 1929: 230. Seth-Smith, 1938: 146; figs. 6, 6a, 6b (with further references). Stempffer, 1942: 117.
=*Papilio alcides* Cramer, 1776 [1775-1791] 1: 150; pl. 96, figs. D, E.
=*Papilio corax* Stoll, 1784, 4: 176; pl. 379, figs. D, E.

M. silenus appears to occur over most of Africa, with the exception of the rain forest areas, from Sierra Leone and Guinea east to Eritraea and Somaliland, south to the Cape. At least three subspecies may be discerned: nominate *silenus* from Upper Guinea, perhaps ranging east to Uganda; *s. ficedula* Trimen in South Africa, extending north along the eastern coast to Kenya and perhaps beyond, inland north to Katanga; and a still unnamed subspecies from interior Kenya north to Eritraea.

Liberia: Cape Palmas, 1 ♂; Bigtown, 1 ♂, 1 ♀ (Naysmith). Robert's Field, 2 ♂, VI (Thomas); Harbel, 1 ♀, II, 1 ♂, XII (Fox).

[**Myrina subornata** Lathy]

Myrina subornata Lathy, 1903: 198; pl. 8, fig. 8. Aurivillius, 1922 [1908-1925]: 378; pl. 66f. Hawker-Smith, 1929: 230; Talbot *in* Seth-Smith, 1938: 148.

This species was described from Nigeria (Anambara Creek vicinity). Aurivillius (1922) records it from "Adamawa", while Talbot (*in* Seth-Smith, 1938) cites it from Ghana and Hawker-Smith (1929) from Haute Volta. It may possibly extend as far west as Liberia, though no specimens have been taken there as yet.

[**Myrina annettae** de Fleury]

Myrina annettae de Fleury, 1924: 161 (Dinguiraye, Guinea). *Myrina annettae:* de Fleury, 1926: 141. Seth-Smith, 1938: 147; figs. 7, 7a (Ghana).

A savanna species ranging from Guinea eastward at least to northern Ghana and hence quite likely to occur in the interior savanna patches of Liberia. According to Talbot (*in* Seth-Smith, 1938) *annettae* may be most closely related to the South African *M. dermaptera* Wallengren.

Genus **OXYLIDES** Hübner

A small genus with but one Liberian species. Of the related *Syrmoptera* Karsch, reviewed recently by Stempffer (1961: 54), there are no known Liberian species at all. Early stages are unknown but Schultze (*in* Aurivillius, 1923: 1220) has given some remarks on adult habits.

Oxylides faunus faunus Drury

Papilio faunus Drury, 1773 [1770-1782]: pl. 1, figs. 4, 5. *Oxylides faunus faunus:* Aurivillius, 1922 [1908-1925]: 381; pl. 68a. Aurivillius, 1923: 1221. de Fleury, 1926: 142. Stempffer, 1950: 403; 1954c: 348. Stempffer and Bennett, 1956: 510.
=*Hesperia hesiodus* Fabricius, 1793: 260.

The nominate subspecies occurs commonly from the Republic of Guinea eastward to Nigeria and northwestern Cameroon. From southern Cameroon south to northern Angola and east to Uganda other subspecies occur. *O. faunus* is a rain forest species.

Liberia: Dyiokouikè; Touzon; Kaouyékè; Penokè (Stempffer, 1950); Kpain, I, VII-IX; Bahn, VIII; Venntown, VIII; Kitoma, VIII; Vaa, VII (Stempffer and Bennett, 1956); no further data, 1 ♂ (Good); Wanau Forest, 2 ♂, VIII; Ganta, 4 ♂, II, 2 ♀, III, 2 ♂, 1 ♀, V, 3 ♂, VI, 3 ♂, VII, 1 ♂, 1 ♀, VIII, 1 ♂, X; Yendamalahoun, 8 ♂, IV; Kpain, 1 ♂, X; trail near Fisabu, 1 ♂, 2 ♀, XII; St. Paul River at Zorzor Road, 1 ♀, III, 2 ♂, V; between Vonjima and Yendamalahoun, 1 ♀, IV (all Fox).

Genus **HYPOLYCAENA** Felder

A large and diverse genus, found both in Africa and in the Indo-

Australian region. In Africa it occurs over the whole continent south of the Sahara, but is particularly well represented in the rain forest regions. Many of the species form there a mimetic assemblage that results in underside patterns being virtually indistinguishable among a large number of species. Life history information for several species may be found in Lamborn *et al.* (1914), Farquharson *et al.* (1922) and Jackson (1937).

Hypolycaena hatita hatita Hewitson

Hypolycaena hatita Hewitson, 1865 [1862-1878]: 51; pl. 23, figs. 21, 22, 24 (fig. 23 is of another species). Aurivillius, 1922 [1908-1925]: 382. Karsch, 1893: 223. Stempffer, 1952a: 186; 1954c: 348. Stempffer and Bennett, 1956: 510.

The species ranges from Sierra Leone east to Kenya and Abyssinia, south through Cameroon and Gabon to Angola. The nominate subspecies is confined to Occidental Africa; in the eastern area, subspecies *ugandae* Sharpe is found and a still undescribed subspecies in the broad intervening area.

Liberia: Kpain, IV (Stempffer and Bennett, 1956); Roberts Field, 1 ♀, VI (Thomas); Harbel, 2 ♀, I, 1 ♂, II, 1 ♂, 1 ♀, IV, 1 ♂, V, 1 ♂, 1 ♀, X, 2 ♀, XI; Kpain, 1 ♂, V; Zorzor, 10 ♂, XI; trail near Fisabu, 2 ♂, XII; Yendamalahoun, 1 ♂, IV (all Fox).

Hypolycaena antifaunus antifaunus Doubleday, Westwood and Hewitson

Iolaus antifaunus Doubleday, Westwood and Hewitson, 1852 [1846-1852]: 481; pl. 75, fig. 1. *Hypolycaena antifaunus:* Hewitson, 1865 [1862-1878]: 51. Karsch, 1893: 223. Aurivillius, 1922 [1908-1925]: 382; pl. 68b. Stempffer, 1950: 403; 1954c: 349.

The nominate subspecies ranges from Sierra Leone and Guinea eastward to eastern Congo (Medje, C. M.) and Uganda (Bwamba, C.M.), south through Cameroon and Gabon to Angola. Farther east, in Uganda and Ruanda-Urundi, occurs subspecies *latimacula* Joicey and Talbot.

Liberia: Kiakake (Stempffer, 1950); Harbel, 1 ♂, I, 1 ♀, II, 2 ♂, III, 2 ♂, XII; Wanau Forest, 1 ♀, II, 2 ♂, III; Zorzor, 1 ♂, XI (all Fox).

Hypolycaena nigra Bethune-Baker

? *Hypolycaena hatita* (in part): Hewitson, 1865 [1862-1878]: 51; pl. 23, fig. 23.
Hypolycaena nigra Bethune-Baker, 1914a: 502. Lamborn *et al.*, 1914: 473. Aurivillius, 1922 [1908-1925]: 382; pl. 68b. *Hypokopelates nigra:* Eltringham, *in* Farquharson *et al.*, 1922: 483; pl. 13, fig. 19 [the generic name is clearly a *lapsus*].

The species occurs from Sierra Leone to Uganda and south through Cameroon to Gabon; it is found also on Fernando Po. This species appears to be much less common in Upper Guinea than its close relative, *H. hatita,* though elsewhere the two are about equally common.

Liberia: no further data, 1 ♂ (Good); Bigtown, 1 ♀ (Naysmith); Bomi Hills, 1 ♀, IV; Wanau Forest, 1 ♂, II (both Fox).

Hypolycaena dubia Aurivillius

Hypolycaena lebona Hewitson: of authors, in part.
Hypolycaena dubia Aurivillius, 1895b: 211; 1922 [1908-1925]: 383; pl. 68b.

This species ranges from Sierra Leone eastward to the eastern Congo and south to Gabon and Katanga, as far as shown by available material (which includes specimens borrowed from the Tervuren Museum). Only males are listed below, since females cannot be distinguished from those of *lebona.* See discussion and list of undifferentiated females under *lebona,* next below.

Liberia: no further data, 4 ♂ (Good); Harbel, 1 ♂, II, 2 ♂, IV, 1 ♂, V, 1 ♂, VI, 1 ♂, X, 1 ♂, XI; Ganta, 3 ♂, II, 2 ♂, V, 1 ♂, VI, 5 ♂, VII, 1 ♂, VIII; Wanau Forest, 2 ♂, II, 2 ♂, III; Zorzor, 9 ♂, XI, 1 ♂, XII (all Fox).

Hypolycaena lebona Hewitson

Hypolycaena lebona Hewitson, 1865 [1862-1878]: 51; pl. 23, figs. 28, 29 (as *antifaunus* on plate). Karsch, 1893: 222; Lamborn *et al.*, 1914: 473. Stempffer, 1950: 403; 1952a: 186. Stempffer and Bennett, 1956: 510.

It is impossible to know if all the preceding references are to *lebona* alone or refer partly to the preceding *dubia.* For this reason I have refrained from citing any of the localities listed by Stempffer (1950) and Stempffer and Bennett (1956). Only males of this and *dubia* are separable; females remain unassociable with their males and indistinguishable from one another. Liberian females examined, presumably representing both species, are as follows:

Liberia: no further data, 3 ♀ (Good); Harbel, 6 ♀, I, 6 ♀, II, 1 ♀, III, 3 ♀, IV, 2 ♀, V, 1 ♀, VI, 1 ♀, VII, 4 ♀, X, 4 ♀, XI; Ganta, 1 ♀, II, 2 ♀, VI, 1 ♀, VII, 1 ♀, X, 1 ♀, XII; Zorzor, 3 ♀, XI; Yendamalahoun, 1 ♀, IV (all Fox).

Liberian males of *lebona* may be separated into three forms differing in various secondary sexual attributes. These forms, with their characters, records and ranges, as far as known, are listed individually.

Form (1). Forewing below with scent patch on vein 2A surrounded by a moderate amount of fuscous shading, but leaving the postmedian band visible below Cu_2; no pale blue scaling in base of forewing above; hindwing above with apical area fuscous.

This form is known from Liberia, southern Cameroon, southern Congo and western Uganda.

Liberia: Harbel, 1 ♂, II, 1 ♂, III; Ganta, 1 ♂, V, 1 ♂, IX; Zorzor, 6 ♂, XI; trail near Fisabu, 1 ♂, XII (all Fox).

Form (2). Forewing below with scent patch on vein 2A surrounded by a dense, heavy fuscous shading which completely obliterates the postmedian band below Cu_2; no pale bluish scaling in basal area of forewing above; hindwing above at critical angle with purple iridescence in apical area.

Specimens of this form have been seen from Sierra Leone, Liberia and southern Cameroon.

Liberia: no further data, 1 ♂ (Good); Harbel, 13 ♂, I, 18 ♂, II, 9 ♂, III, 4 ♂, IV, 7 ♂, V, 1 ♂, VIII, 1 ♂, IX, 2 ♂, X, 2 ♂, XI, 5 ♂, XII; Fish Lake, 1 ♂, I; Ganta, 1 ♂, I, 3 ♂, II, 4 ♂, V, 1 ♂, VIII; Wanau Forest, 2 ♂, I, 1 ♂, III; Zorzor, 1 ♂, XI; trail near Fisabu, 1 ♂, XII (all Fox).

Form (3). Forewing below with scent patch on vein 2A almost without fuscous peripheral shading; basal area of forewing above with streaks of pale blue shading; hindwing above with apical area fuscous.

Specimens of this form have been examined from Sierra Leone, Liberia, southern Cameroon, Gabon and Uganda.

Liberia: Harbel, 2 ♂, I, 2 ♂, II, 2 ♂, III, 3 ♂, IV, 3 ♂, V, 1 ♂, VI, 1 ♂, VIII, 1 ♂, X, 2 ♂, XI; Wanau Forest, 1 ♂, X (all Fox).

Hypolycaena liara liara H. H. Druce

Hypolycaena liara H. H. Druce, 1890: 27. Aurivillius, 1922 [1908-1925]: 383; pl. 67a.

=*Hypolycaena naara* Hewitson: Karsch, 1893: 223 (Togo; synonymy on the authority of Aurivillius, 1895b: 211).

The species was not previously known from farther west than Ghana. Liberian females differ markedly from females at hand from southern Cameroon, being smaller (barely over the size of *lebona* females), the basal blue more limited, much darker and almost unnoticeable. I have seen no material from southern Nigeria, from which country Druce described *liara,* and so cannot tell which form is typical. The Ganta female was noted by Fox as taken *in copula,* but the male associated with it is *H. dubia* Aurivillius!

The species ranges from Liberia eastward to southern Sudan (subspecies *obscura* Stempffer), Kenya and Uganda (subspecies *plana* Talbot), south to southern Cameroon and Gabon. It appears to be rather local and not very common.

Liberia: Harbel, 4 ♀ I, 3 ♀, II, 2 ♀, III, 1 ♀, V, 2 ♀, XII; Ganta, 1 ♀, VII (Fox).

Hypolycaena philippus philippus Fabricius

Hesperia philippus Fabricius, 1793 [1793-1794]: 283. *Hypolycaena philippus:* Aurivillius, 1922 [1908-1925]: 384; pl. 67a. de Fleury, 1926: 142. Hawker-Smith, 1929: 230. Stempffer, 1950: 403; 1952a: 186. Stempffer and Bennett, 1956: 510.

=*Iolaus orejus* Hopffer, 1855: 641.

A common species, *H. philippus* is also one of Africa's most ubiquitous butterflies, ranging over the whole continent south of the Sahara, including Madagascar (subspecies *ramonza* Saalmuller).

Liberia: trail Fléoulokè-Poutoukè; Diakakè; Kaouyékè (Stempffer, 1950); Kpain, IV, VIII, IX; Monrovia, II; Yamein, I (Stempffer and Bennett, 1956); no further data, 5 ♂, 4 ♀ (Naysmith); no further data, 2 ♂ (Good); Fisherman's Lake, 3 ♂, 1 ♀, V; Robert's Field, 7 ♂, 2 ♀, VI (Thomas); Harbel, 1 ♀, III, 1 ♀, V; Bomi Hills, 2 ♂, 1 ♀, IV; Ganta, 1 ♀, VII (Fox).

[**Hypolycaena moyambina** Bethune-Baker]

Hypolycaena moyambina Bethune-Baker, 1904: 232. Aurivillius, 1922 [1908-1925]: 384.

This species is so far known only from Sierra Leone and seems not to have been taken since its original capture.

[**Hypolycaena condamini** Stempffer]

Hypolycaena condamini Stempffer, 1956a: 207; figs. 1, 2.

The species was described from a single female from Parc National Niokolo-Koba, Senegal.

Genus **DAPIDODIGMA** Karsch

Long thought to be monotypic, this genus is now known to contain two distinct but similar species (Clench, 1961a), one of which occurs in Liberia. There is no life history information available on the genus, although Schultze (*in* Aurivillius, 1923: 1224) suspected that the larvae feed on *Loranthus*.

Dapidodigma hymen Fabricius

Papilio hymen Fabricius, 1775: 519. *Dapidodigma hymen:* Karsch, 1895: 310. Stempffer, 1950: 403. Stempffer and Bennett, 1956: 510. Clench, 1961b: 64; pl. 1, figs. 1, 4, 7, 10.
=*Papilio liger* Cramer, 1779 [1775-1791] 3: 109; pl. 254, figs. E, F.

D. hymen appears to be strictly an Occidental African species, ranging from Sierra Leone to southern Nigeria, while *demeter* Clench occupies a vast area from Ghana to Uganda, Katanga and Angola. The two species are sympatric from Ghana to southern Nigeria.

Liberia: Webo (Stempffer, 1950); Kpain, II, IV, IX; Bahn, VIII (Stempffer and Bennett, 1956); Harbel, 1 ♀, I, 1 ♀, III, 4 ♂, IV, 1 ♂, 2 ♀, V, 1 ♀, XII; Wanau Forest, 1 ♀, I; Ganta, 1 ♀, VII, 2 ♀, IX (Fox).

Genus **IOLAUS** Hübner

This large and difficult genus has been well revised by Stempffer and Bennett (1958, 1959), whose work is followed here. Two problems are of primary significance in the study of this group. The first is their difficulty of capture. They are rapid fliers and most of them usually remain high in the forest canopy where they live in more or less proximity to their foodplant, the epiphytic vine *Loranthus*. The usual collecting methods rarely succeed in getting more than a tantalizingly few specimens, for example, the Liberian material enumerated below. Only with the development of such specialized techniques as those devised and used by T. H. E. Jackson of Kenya, has it been pos-

sible to obtain them in quantity and variety. The second problem has to do with the extraordinarily similar appearance which many of the species show to one another, making genitalic examination almost essential to correct, sure identification. This close interresemblance is not entirely due to the comparative simplicity of their patterns, nor to their being simply a "difficult" group. Riley (1928b) has observed the interesting fact that the genus in West Africa tends to have a common facies (upper surfaces of both sexes dark blue), while in East Africa it tends to be a different common facies (blue above lighter, often with a central white patch, particularly in females). Thus there seems to be a mimetic association involved, discussed at greater length by Van Someren and Jackson (1960: 145; pl. 8). The genus is well developed in all parts of tropical Africa. A considerable amount of information on the life histories of several species can be found in Farquharson *et al.* (1922), Jackson (1937) and Seth-Smith (1938).

[**Iolaus (Stugeta) bowkeri occidentalis** Stempffer and Bennett]

Iolaus (*Stugeta*) *bowkeri occidentalis* Stempffer and Bennett, 1958: 1268.

Apart from this subspecies, so far known only from Sierra Leone, *Stugeta bowkeri* is a species entirely of eastern and southern Africa — from Ethiopia and Somaliland south to the Cape Colony and west to Angola and South-West Africa.

[**Iolaus (Stugeta) marmorea marmorea** Butler]

Aphnaeus marmorea Butler, 1866: 169.
Iolaus (*Stugeta*) *marmorea:* Stempffer and Bennett, 1958: 1269.

The nominate subspecies is known from the Republic of Guinea eastward to southern Sudan. It has not yet been found in Liberia, but may occur there. Another subspecies has been described from Kenya.

[**Iolaus (Tanuetheira) timon timon** Fabricius]

Papilio timon Fabricius, 1787: 65. *Iolaus* (*Tanuetheira*) *timon:* Stempffer and Bennett, 1958: 1279.

The species, which so far has not been taken in Liberia, is known to occur from Sierra Leone eastward to Uganda and south to northern

Angola. Several subspecies are known, but *prometheus*, described by H. H. Druce as a good species and reduced by Stempffer and Bennett to a subspecies, must be either a form or a sibling species. The males differ from those of *t. timon* in the presence of a discal, shining bronzy-brown patch on the forewing and a somewhat large androconial patch on the hindwing, but females are supposed to be the same and the male genitalia are identical to those of *t. timon*. The range of *prometheus* covers most of that nominate *timon*, extending from Sierra Leone to Gabon and former French Congo.

[Iolaus (Iolaphilus) menas H. H. Druce]

Iolaus menas H. H. Druce, 1890: 29. *Iolaus* (*Iolaphilus*) *menas:* Stempffer and Bennett, 1958: 1299; fig. 53.

The species occurs from Senegal across to southern Sudan, Uganda, Kenya and Tanganyika and is recorded from Gabon as well, but has not yet been taken in Liberia.

Iolaus (Iolaphilus) iulus Hewitson

Iolaus iulus Hewitson, 1869 [1862-1878] supplement: 9; pl. 4, figs. 41, 43. *Iolaus* (*Iolaphilus*) *iulus:* Stempffer and Bennett, 1958: 1302; fig. 56.

The species ranges from Gambia to Nigeria and south to Gabon and former French Congo, but has not been recorded from Liberia previously.

Liberia: Bigtown, 1 ♀ (Naysmith); Harbel, 2 ♂, III, 1 ♂, IV (Fox).

[Iolaus (Iolaphilus) aelianus aelianus Staudinger]

Iolaus aelianus Staudinger, 1891: 148. *Iolaus* (*Iolaphilus*) *aelianus:* Stempffer and Bennett, 1958: 1303; fig. 57.

The species ranges from Sierra Leone eastward to central Congo and south to Cameroon and former French Congo. There is a subspecies in Uganda. No Liberian specimens are yet known.

[Iolaus (Iolaphilus) alcibiades Kirby]

Iolaus alcibiades Kirby, 1871: 409. *Iolaus* (*Iolaphilus*) *alcibiades:* Stempffer and Bennett, 1958: 1309; fig. 66.
Argiolaus jamesoni H. H. Druce, 1891: 145.

The species ranges from Sierra Leone to Gabon, former French Congo and southern Congo. No Liberian material is known as yet.

[**Iolaus (Iolaphilus) paneperata** H. H. Druce]

Iolaus paneperata H. H. Druce, 1890: 30. *Iolaus* (*Iolaphilus*) *paneperata:* Stempffer and Bennett, 1958: 1310; fig. 67.

The species is known from Sierra Leone to the Congo, but has not so far been found in Liberia.

[**Iolaus (Iolaphilus) lukabas** H. H. Druce]

Iolaus lukabas H. H. Druce, 1890: 30. *Iolaphilus lukabas:* Stempffer and Bennett, 1958: 1312; fig. 68.
=*Iolaus julius* Staudinger, 1891: 146.
=*Iolaus lekanion* H. H. Druce, 1891: 144.

This species is known from Sierra Leone to Cameroon. No Liberian specimens have as yet been taken.

[**Iolaus (Iolaphilus) ismenias ismenias** Klug]

Lycaena ismenias Klug, 1834 [1829-1845]: pl. 40, figs. 1, 2. *Iolaus* (*Iolaphilus*) *ismenias:* Stempffer and Bennett, 1958: 1316; fig. 73.

Nominate *ismenias* ranges from southern Senegal eastward to southern Sudan and northern Uganda; the subspecies *piaggiae* Oberthür occurs in Ethiopia. *I. ismenias* is essentially a savanna species but may occur in the interior of Liberia, though no specimens have been found as yet.

[**Iolaus (Iolaphilus) calisto** Doubleday, Westwood and Hewitson]

Anthene calisto Doubleday, Westwood and Hewitson, 1852 [1846-1852]: 487; pl. 75, fig. 6. *Iolaus* (*Iolaphilus*) *calisto:* Stempffer and Bennett, 1958: 1325; fig. 85.

The species ranges from Gambia to Nigeria and Gabon, but no Liberian specimens are known.

[**Iolaus (Iolaphilus) laonides** Aurivillius]

Iolaus laonides Aurivillius, 1897: 218. *Iolaus* (*Iolaphilus*) *laonides:* Stempffer and Bennett, 1958: 1326; fig. 86.

This species ranges from Sierra Leone to Nigeria and Cameroon. No Liberian specimens are known.

[**Iolaus (Philiolaus) parasilanus maesseni** Stempffer and Bennett]

Iolaus (*Philiolaus*) *parasilanus maesseni* Stempffer and Bennett, 1958: 1340; figs. 102, 103, 97, 98 (not figs. 104, 105- transposed with 97, 98 by error; see next ref.), 106. Stempffer, 1961b: 101 (corrects transposition of figures in preceding ref.; but note mistaken mention of non-existent name "mabillei" in text, but not caption).

This subspecies was described and is known so far only from Ghana (Ho, in former British Togoland).

Iolaus (Iolaus) eurisus helius Fabricius

Papilio helius Fabricius, 1781: 112.
Iolaus eurisus: Stempffer and Bennett, 1956: 511; 1958: 1343; fig. 108.

The species ranges from Senegal to Nigeria. From Ivory Coast westward as subspecies *helius*, east of there as the nominate subspecies.

Several of the Harbel specimens were noted as being crepuscular. One pair (14-ii-1955) was taken *in copula*.

Liberia: Yamein (Stempffer and Bennett, 1956); no further data, 1 ♂; Cape Palmas, 1 ♂, 1 ♀; Bigtown, 1 ♂, 1 ♀ (all Naysmith); Harbel, 4 ♂, I, 6 ♂, 1 ♀, II, 3 ♂, 1 ♀, III, 3 ♂, IV, 8 ♂, V, 6 ♂, VI, 1 ♂, XI, 1 ♂, XII (Fox).

Iolaus (Iolaus) bolissus Hewitson (subspecies)

There is a single male in Carnegie Museum from Liberia (Good), the only record of the species known to me from west of Cameroon. The species ranges, in several subspecies, from there eastward to the Congo and Uganda, south to Katanga and Angola.

[**Iolaus (Epamera) scintillans** Aurivillius]

Iolaus scintillans Aurivillius, 1905: 13; pl. 3, fig. 2. *Iolaus* (*Epamera*) *scintillans:* Stempffer and Bennett, 1959: 231; fig. 115.
=*Epamera gazei* H. H. Druce, 1912: 129; Druce, Druce & Chapman, 1913: 278, pl. 9, figs. 2, 3.

The species ranges from Senegal to Uganda, apparently chiefly in the savanna belt. It has not as yet been taken in Liberia.

Iolaus (Epamera) laon Hewitson

Iolaus laon Hewitson, 1878 [1862-1878] supplement: 28; pl. 4a, figs. 46, 47. *Iolaus* (*Epamera*) *laon:* Stempffer and Bennett, 1959: 251; fig. 135.
=*Iolaus adamsi* Lathy, 1903: 199; pl. 8, fig. 9.
=*Iolaus emma* Süffert, 1904: 69.

The species ranges from Liberia only as far as southwestern Nigeria.

Liberia: 12 mi. east of Monrovia (Stempffer and Bennett, 1959).

[**Iolaus (Epamera) coelestis** Bethune-Baker]

Iolaus coelestis Bethune-Baker, 1926: 394. *Iolaus* (*Epamera*) *coelestis:* Stempffer and Bennett, 1959: 252; figs. 136-138.

The species ranges from Ivory Coast eastward to Cameroon and south to western Congo. It may possibly occur in Liberia, but has not yet been taken.

Iolaus (Epamera moyambina Stempffer and Bennett

Iolaus (*Epamera*) *moyambina* Stempffer and Bennett, 1959: 254; figs. 139-143.

Females in this genus are notoriously difficult to identify, particularly single specimens. In this instance, however, the identification is fairly certain: the subquadrate apical patch on the hindwing above, the thick, sharply delimited brown border on the forewing below, the greenish tone to the blue above, all point to this species, hitherto known only from Sierra Leone.

Liberia: Harbel, 1 ♀, X (Fox).

Iolaus (Epamera) pollux oberthueri Riley

Epamera pollux oberthueri Riley, 1929: 496. *Iolaus* (*Epamera*) *pollux oberthueri:* Stempffer and Bennett, 1959: 260.

This subspecies was previously known only from Ivory Coast. The nominate subspecies occurs in Nigeria, Cameroon and Gabon; subspecies *albocaerulea* Riley is found in Uganda and eastern Congo.

Liberia: no further data, 1 ♂ (Good).

Iolaus (Epamera) sappirus H. H. Druce

Epamera sappirus H. H. Druce, 1902: 117; pl. 12, fig. 1. *Iolaus* (*Epamera*) *sappirus:* Stempffer and Bennett, 1959: 268; fig. 154.

This rather uncommon species ranges from Sierra Leone eastward to Nigeria and eastern Congo. It has not been recorded before from Liberia.

Liberia: no further data, 1 ♂ (Good).

Iolaus (Epamera) bellina bellina Plötz

Hypolycaena bellina Plötz, 1880: 200. *Iolaus (Epamera) bellina:* Stempffer and Bennett, 1959: 270; fig. 156.

The species, in several subspecies, ranges from Sierra Leone eastward to Uganda, south to Katanga and occurs also on the island of St. Thomas.

Liberia: 12 mi. east of Monrovia (Stempffer and Bennett, 1959); no further data, 1 ♂ (Good).

Iolaus (Epamera) cytaeis leonis Riley

Epamera cytaeis leonis Riley, 1928b: 390; pls. 10, 11, figs. 24. *Iolaus (Epamera) cytaeis leonis:* Stempffer and Bennett, 1959: 276.

This subspecies is known only from Sierra Leone and Liberia. Other subspecies occur from Nigeria south to Gabon and southern Congo (Kasai).

Liberia: 30 km. east of Monrovia (Stempffer and Bennett, 1959).

[**Iolaus (Epamera) fontainei** Stempffer]

Epamera fontainei Stempffer, 1956b: 33; fig. 18 and pl. 2, figs. 9, 10. Stempffer and Bennett, 1959: 279; fig. 162.

The species is known from western Congo (Leopoldville), northern Congo (Uele) and Sierra Leone. It has not yet been found in Liberia.

Iolaus (Epamera) aethria Karsch

Iolaus aethria Karsch, 1893: 220. *Iolaus (Epamera) aethria:* Stempffer and Bennett, 1956: 511; 1959: 290; fig. 168.
=*Epamera mirabilis* H. H. Druce, 1903: 71.

The species ranges from Liberia to southern Cameroon.

Liberia: Kpain, 1 ♂, I (Stempffer and Bennett, 1956).

Iolaus (Epamera) iasis iasis Hewitson

Iolaus iasis Hewitson, 1865 [1862-1878]: 42; pl. 19, figs. 11, 12. *Epamera iasis:* Stempffer and Bennett, 1956: 511. *Iolaus (Epamera) iasis:* Stempffer and Bennett, 1959: 298; figs. 175, 176.
=*Iolaus bertha* Suffert, 1904: 66.

The species ranges from Senegal to Uganda and Angola.

Liberia: Kpain, IV; Yamein, I (Stempffer and Bennett, 1956);

12 mi. east of Monrovia (Stempffer and Bennett, 1959); Bigtown, 1 ♂, 1 ♀ (Naysmith); no further data, 1 ♂ (Good); Harbel, 2 ♂, II, 1 ♂, IV, 3 ♂, V, 1 ♂, XI; Wanau Forest, 1 ♂, III, 1 ♂, V; Ganta Mission, 1 ♂, VII (all Fox).

[**Iolaus (Epamera) sibella** H. H. Druce]

Epamera sibella H. H. Druce, 1910b: 372; pl. 35, fig. 12. *Iolaus* (*Epamera*) *sibella:* Stempffer and Bennett, 1959: 301; figs. 177, 178.

The species occurs from Sierra Leone to Uganda and Gabon but has not so far been found in Liberia.

[**Iolaus (Epamera) belli** Hewitson]

Iolaus belli Hewitson, 1869 [1862-1878] supplement: 9; pl. 4, figs. 33, 34. *Iolaus* (*Epamera*) *belli:* Stempffer and Bennett, 1959: 303.

This species was described from Sierra Leone, from a female which Stempffer and Bennett believe to be the female of *sibella*. Should this prove to be the case the name *belli* would have to supersede *sibella*.

[**Iolaus (Epamera) maesa** Hewitson]

Myrina maesa Hewitson, 1863 [1862-1878]: 27; pl. 11, fig. 45. *Iolaus* (*Epamera*) *maesa:* Stempffer and Bennett, 1959: 316; fig. 196.

This species occurs from Sierra Leone to Uganda and should, therefore, be found eventually in Liberia.

Iolaus (Etesiolaus) catori catori Bethune-Baker

Iolaus catori Bethune-Baker, 1904: 233. *Argiolaus catori:* Riley, 1928: 380; pls. 10, 11, fig. 10. *Iolaus* (*Etesiolaus*) *catori:* Stempffer and Bennett, 1959: 319; fig. 198.

The species occurs in two subspecies: the nominate, extending from Sierra Leone to Cameroon, and *cottoni* Bethune-Baker, found in Uganda, Tanganyika and eastern Congo. The two females listed below agree so well with the figures of Riley and the description of Stempffer and Bennett that I have little hesitation in assigning them here.

Liberia: Harbel, 1 ♀, II, 1 ♀, XII (Fox).

Subfamily APHNAEINAE

Genus **PSEUDALETIS** H. H. Druce

No species of this curious genus can be considered common and several of them are among Africa's rarest butterflies. Life history information is non-existent, but in recent years two specimens have been reported (Stempffer, 1952c: 148; 1961: 60) taken at night. This seems more likely to be due to chance than to possible nocturnal habits, though such have been suggested. The genus is largely or wholly confined to rain forest regions, where it may possibly be an upper canopy dweller (which would go far toward explaining its extreme rarity in collections).

[**Pseudaletis zebra** Holland]

Pseudaletis zebra Holland, 1891b: 50. Aurivillius, 1922 [1908-1925]: 379. *Pseudaletis clymenus zebra:* Peters, 1952: 103. *Pseudaletis clymenus:* Stempffer, 1957a: 162.

The sole reason for including this species here is a single male in Carnegie Museum labelled "West Africa, Naysmith" (Ehrmann Collection). Naysmith collected extensively in Liberia and, so far as I am aware, nowhere else in Africa. Ehrmann's often reprehensible labelling habits, as well as the vague data on the specimen, combine to make its significance doubtful.

P. zebra is unquestionably closely allied to *clymenus* (but not a synonym, as Stempffer, 1957a, states) and in the absence of the above-mentioned specimen I should be inclined to agree with Peters in considering it only subspecifically distinct and to be the Gabonese representative of *clymenus,* which is known only from southern Cameroon. Modest series of both are at hand, and they exhibit good and constant differences in several traits and both sexes, so it may be that two species are indeed represented.

[**Pseudaletis clymenus subangulata** Talbot]

Pseudaletis clymenus subangulata Talbot, 1935: 115. Stempffer, 1957a: 162.

I have not seen the description nor any specimens of this subspecies, described from Sierra Leone, and know it only from the brief remarks in Stempffer (1957a). It may possibly be the same as the preceding species.

[**Pseudaletis leonis** Staudinger]

Sithon leonis Staudinger, 1888 [1884-1888]: 276. *Pseudaletis leonis:* Aurivillius, 1922 [1908-1925]: 380; pl. 66g.
=*Pseudaletis trifasciata* Sharpe, 1890a: 103.

The species was described from Sierra Leone and may well occur in Liberia, though no specimens are as yet known. A single male of a probably different subspecies is at hand from southern Cameroon.

[**Pseudaletis richardi** Stempffer]

Pseudaletis richardi Stempffer, 1952c: 146; figs.; 1954c: 349.

Described and so far known only from a single male from the Nimba Reserve, Guinea. The species probably occurs in Liberia as well.

Genus **APHNAEUS** Hübner

This strikingly handsome genus, recently revised by Stempffer (1954b), occurs over most of Africa south of the Sahara but seems to be particularly well developed in the Rhodesia-Katanga-Nyasaland area. None of its species can be called truly common and many are extremely rare. Of the three which present information indicates to be more or less likely to occur in Liberia only one so far has been found.

Aphnaeus orcas orcas Drury

Papilio orcas Drury, 1782 [1770-1782], 3: 46; pl. 34, figs. 2, 3. *Aphnaeus orcas:* Stempffer, 1954b: 494; figs. 1, 2. Stempffer and Bennett, 1956: 511.
Aphnaeus orcas hollandi: Stempffer, 1950: 403.

There is a male in Carnegie Museum from 'Nzerekore, Republic of Guinea, 17-vi-1952 (Herold), from the collection of Joseph Grom. The species ranges from Sierra Leone to Uganda and Kenya, south to the Katanga and the mouth of the Congo. The nominate subspecies occurs over most of this range except the extreme east and southeast where the weakly differentiated subspecies *hollandi* Butler is found.

Liberia: Penoke; Touzon (Stempffer, 1950); Zugoli (Stempffer and Bennett, 1956); Zorzor, 1 ♂, XII (Fox).

[**Aphnaeus asterius** Plötz]

Aphnaeus asterius Plötz, 1880: 201. Stempffer, 1954b: 500; fig. 5.

The species occurs in Sierra Leone, Ivory Coast, Congo, Cameroon and Gabon and it seems likely that it will be found eventually in Liberia. Several forms are known and it is possible, as Stempffer notes, that more than one species is included in the current concept of *asterius*.

[**Aphnaeus brahami** Lathy]

Aphnaeus brahami Lathy, 1903: 199; pl. 8, fig. 10. Stempffer, 1954b: 504; fig. 7.

Described originally from Nigeria (Ogruge), the species since has been taken in Dahomey and, surprisingly, in Tanganyika. Though the possibility of its occurrence in Liberia is perhaps remote, it is included here because its full distribution is obviously still incompletely known.

Genus **SPINDASIS** Wallengren

This rather large and difficult genus is sparsely distributed in western Africa, as its members are preeminently dwellers of the savanna. Signal exceptions to this are *crustaria* Holland and *leonina* Sharpe, typical rain forest inhabitants. The general similarity of the patterns of many species has been responsible for much misidentification. Life histories are still largely unknown, but Jackson (1937) has given interesting details on the early stages of one species.

[**Spindasis (Spindasis) avriko** Karsch]

Aphnaeus avriko Karsch, 1893: 223; pl. 5, fig. 9. *Spindasis avriko:* Aurivillius, 1923 [1908-1925]: 413; pl. 69f. Hawker-Smith, 1929: 231.

S. avriko was described from Togo and more recently (Hawker-Smith, 1929) has been reported from Haute Volta. It may possibly occur in Liberia.

[**Spindasis (Spindasis) mozambica** Bertolini]

Aphnaeus mozambica Bertolini, 1851: 177. de Fleury, 1926: 140. *Spindasis mozambica:* Lathy, 1903: 200. Aurivillius, 1923 [1908-1925]: 413; pl. 69e and f.
? *Aphnaeus natalensis* Doubleday, Westwood and Hewitson, 1865: Karsch, 1893: 223.

The species occurs from Guinea and Sierra Leone eastward to Nigeria (Lathy, 1903), then widely disjunct in southeastern Africa.

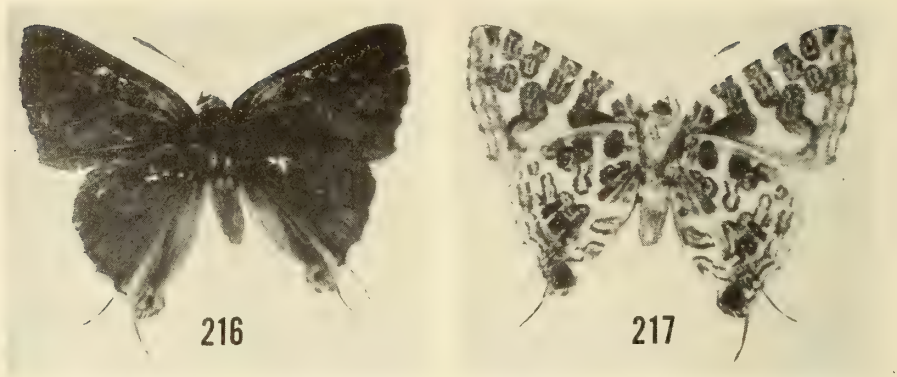


Fig. 216, *Spindasis* (*Spindasis*) *crustaria mysteriosa* new subspecies, 'Nzerekore, Republic of Guinea, male holotype, upperside (x 1.7). Fig. 217, same specimen, underside.

It is probable that Karsch's record of "*natalensis*" from Togo is a misidentification of this species. No Liberian specimens are known.

Spindasis (Spindasis) crustaria mysteriosa new subspecies
(Figs. 216, 217; compare also 218, 219)

Male. — Upperside: forewing entirely fuscous, with no trace of iridescence; fringe whitish, broadly checked with fuscous at the vein-ends. Hindwing fuscous with a very elusive subtornal patch of iridescent blue (*not* violet) between 2A and M_3, from about the middle of the wing to very near termen, leaving a fuscous terminal border about ½ mm. thick. The bases of the two tails are orange and there is some peripheral orange around the tornal lobe. Fringe whitish, the fuscous vein-end checkering very thin, hardly wider than a vein; fringe of tornal lobe wholly fuscous. Underside: ground color and markings virtually identical with those of *crustaria* save that they are broader, somewhat less crisp and less sharply defined, with a tendency to fuse where they touch (particularly noticeable in the area of mid-costa on the hindwing; in the postmedian area veins Cu_2 and 2A each have a short thin streak of bright orange extending no further distad than subterminal line.

Length of forewing, 14.5 mm. (holotype).

Holotype. — ♂, 'Nzerekore, Republic of Guinea, 17-VI-1952 (Herold), from the collection of Joseph Grom.

Paratype. — ♂, Zorzor, Liberia, 2-XII-1958 (Fox). C. M. Ent. type series no. 500.

Remarks. — This subspecies is strikingly different from nominate *crustaria* (males) (figs. 218, 219) in the utter absence of iridescent color on the forewing, its much reduced extent on the hindwing and its change of color, from the violet of nominate *crustaria* to blue, to-

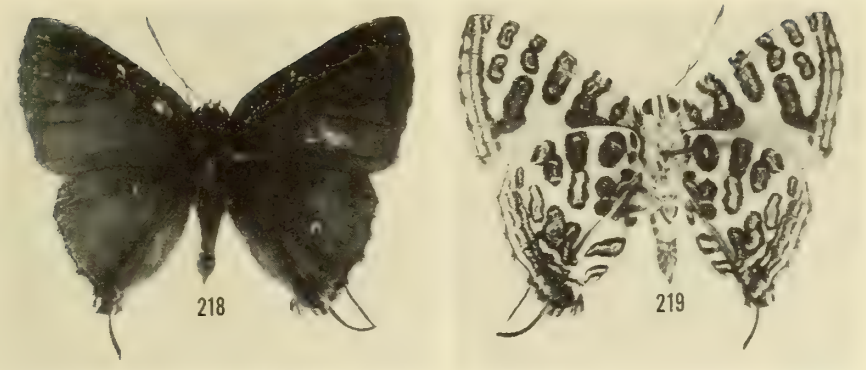


Fig. 218, *Spindasis* (*Spindasis*) *crustaria crustaria* Holland, Lolodorf, Cameroon, male upperside (x 1.9). Fig. 219, same specimen, underside.

gether with the thicker fuscous border that delimits this blue distally.

It is probable that this is the same form as that recorded by Stempffer (1950: 403) under the name *iza*. *Spindasis iza* Hewitson (1865 [1862-1878]: 62; pl. 25, fig. 5) has been an all but unknown entity ever since its first publication. Hewitson cited no locality whatever and the single female he described was characterized erroneously as a male. Aurivillius (1898: 332) gave a locality, Gabon, based on specimens from the Hewitson collection, but added no descriptive data and his later discussion (1923 [1908-1925]: 414; pl. 69g) seems to have been based entirely on Hewitson's original description and figure. From the distribution summary Stempffer (1950) gives under his *iza* ("Connu du Sud Cameroun, du Gabon et du Congo Belge") I suspect that he considered *iza* and *crustaria* to be the same.

Although there is a long series of both sexes of *crustaria* Holland (1890a: 430) in Carnegie Museum from Gabon (including type), southern Cameroon, Katanga and Uganda, there is not a single specimen exhibiting even the slightest tendency to resemble the underside figure of *iza* given by Hewitson.

[**Spindasis (Lipaphnaeus) aderna aderna** Plötz]

Zeritas aderna Plötz, 1880: 203. *Spindasis aderna:* Aurivillius, 1898: 332. Aurivillius, 1923 [1908-1925]: 415; pl. 70a.
=*Zeritis fallax* E. M. Sharpe, 1890a: 104. Crowley, 1890: 555; pl. 17, fig. 4.
=*Zeritis latifimbriata* E. M. Sharpe, 1890a: 105. Crowley, 1890: 555; pl. 17, fig. 5.

An extremely rare and local species (at least in western Africa),

S. aderna has been recorded from Sierra Leone, Cameroon, Gabon and ranges eastward to Uganda and Rhodesia (subspecies *pan* Talbot and *spindasoides* Aurivillius). There are, as yet, no known records from Liberia.

Spindasis (Lipaphnaeus) leonina leonina Sharpe

Zeritis leonina Sharpe, 1890a: 104 (♀). *Spindasis l. leonina:* Aurivillius, 1923 [1908-1925]: 416; pl. 70a. *Spindasis leonina:* Stempffer, 1954c: 349. *Crudaria l. leonina:* Peters, 1952: 110. *Spindasis (Lipaphnaeus) leonina:* Stempffer and Bennett, 1956: 511.
=*Zeritis bicolor* Sharpe, 1891: 241 (♂).

The subspecies ranges from Sierra Leone and Guinea eastward to Nigeria. In southern Cameroon a distinct subspecies (*bitje* H. H. Druce) occurs, and in Adamawa the subspecies *paradoxa* Schultze is found, which recently (Clench, 1963a: 43) has been suggested as possibly occurring in eastern Kenya as well.

Liberia: Kpain, III (Stempffer and Bennett 1956); Harbel, 1 ♂, VIII (Fox).

Genus **APHARITIS** Riley

[Apharitis nilus sabulosa Hawker-Smith]

Aphnaeus nilus Hewitson, 1865 [1862-1878]: 62. *Spindasis nilus:* Aurivillius, 1898: 332; 1923 [1908-1925]: 415. Peters, 1952: 108 (*subaureus* Grose-Smith a synonym).
=*Aphnaeus subaureus* Grose-Smith, 1895: 358. *Spindasis subaureus:* Grose-Smith, 1902 [1887-1902] (XXX): 146; figs. 11, 12. Aurivillius, 1898: 332; 1923 [1908-1925]: 415; pl. 69g.
Spindasis subaurea sabulosa Hawker-Smith, 1929: 231.

This species has not been taken in Liberia. It appears to be a savanna or subdesert species and may turn up eventually in one of the savanna "islands" in the interior. *A. nilus* ranges, so far as known, from southern Sudan westward to Upper Volta, separated in the latter region as subspecies *sabulosa.*

[Apharitis (?) **lutosa** Plötz]

Aphnaeus lutosus Plötz, 1880: 200.
Spindasis lutosa: Aurivillius, 1898: 332; 1923 [1908-1925]: 415.

This species was described from a single badly worn specimen taken

at Aburi (Ghana) and no others appear to have been found since. Aurivillius (1898) declared it different from anything else known to him.

Genus **ZERITIS** Boisduval

[**Zeritis nereine** Boisduval]

Zeritis nereine Boisduval, 1836: 6; pl. 22, fig. 6. Aurivillius, 1898: 333; 1924 [1908-1925]: 418; pl. 70a. Hawker-Smith, 1929: 231.

An extremely rare species not as yet taken in Liberia, though recorded from Guinea, Upper Volta, Ghana, Dahomey, Niger and eastward to Uganda.

Genus **AXIOCERSES** Hübner

Three species of this readily recognized genus are more or less regional but only one of them is known to occur in Liberia. Two of these three, *harpax* and *bambana,* are extremely similar in appearance and all three are subject to considerable variation — geographic, seasonal and individual. Stempffer (1957b: 217) has recently clarified this confusing situation and additional observations on differentiation and distribution (with some maps) are given in Clench (1963b).

Axiocerses harpax harpax Fabricius

Papilio harpax Fabricius, 1775: 829. *Axiocerses harpax:* Stempffer, 1950: 403; 1952a: 186. Stempffer and Bennett, 1956: 511. Stempffer, 1957b: 217, fig. A. *Axiocerses harpax harpax:* Clench, 1963b: 182, figs. 1, 3C.
=*Axiocerses harpax piscatoris* Clench, 1943: 219.

Stempffer (1957b) has correctly synonymized my *piscatoris* to *harpax harpax,* but the fact remains that there are at least four subspecies of *harpax.* The nominate subspecies is confined to the forested regions of Upper Guinea approximately as far as western Nigeria; probably adjoining it to the east is subspecies *efulena* Clench, so far known only from southern Cameroon; still farther east, in eastern Congo, Uganda, western Kenya and eastern Abyssinia is subspecies *ugandana* Clench; in the savanna regions to the north of all three of the foregoing is the subspecies *kadugli* Talbot, known from Senegal to Abyssinia and perhaps Aden, Arabia. The equator roughly marks the southern limit of the species.

Liberia: Fisherman's Lake (Clench, 1943); Douékè; Ziabli (Stempffer, 1950); Kpain, III, IV, IX; Monrovia, II (Stempffer and Bennett 1956); Cape Palmas, 1 ♂ (Naysmith); Harbel, 1 ♂, II, 1 ♂, IV, 2 ♂, V; Bomi Hills, 1 ♂, IV; Fish Lake 1 ♀, XII; Wanau Forest, 1 ♀, II (all Fox).

[**Axiocerses bambana** Grose-Smith]

Axiocerses bambana Grose-Smith, 1900 [Grose-Smith and Kirby, 1887-1902] (XXVI): 123; figs. 10, 11. Stempffer, 1957b: 217; fig. 6b. Clench, 1963b: 184; figs. 1, 3B.
=*Axiocerses harpax* Fabricius: of many authors, at least in part.

This species largely replaces *harpax* to the south and east, but there are a few records (see Stempffer, 1957b; Clench, 1963b) from Occidental Africa suggesting that the species may occur in savanna there. No Liberian records are known.

[**Axiocerses amanga** Westwood]

Axiocerses amanga Westwood, 1881: 351. Aurivillius, 1898: 335; 1924 [1908-1925]: 421; pl. 70b, c. Stempffer, 1957: 221; fig. 6c. Clench, 1963b: 185, figs. 2, 3D.

This species is best known from Africa south of the equator, and north of it only eastward of the Rift Valley. There are several records from Upper Guinea also, including Senegal-Niger, Guinea, Upper Volta and the still little known subspecies *borealis* Aurivillius from the mountains of Adamawa (see discussion in Clench, 1963b). It may possibly be found in savannas in the Liberian interior but no specimens are as yet known.

Subfamily PLEBEJINAE

Tribe LAMPIDINI

Genus **CUPIDESTHES** Aurivillius

This genus is a close ally of *Anthene* and was revised along with the latter by Bethune-Baker in 1910. The species average a little larger and more robust than those of *Anthene* and in general seem to be much less common (or more local).

[**Cupidesthes voltae** Sharpe]

Lycaenesthes voltae Sharpe, 1890a: 105. Crowley, 1890: 555; pl. 18, fig. 6. *Cupidesthes voltae:* Bethune-Baker, 1910: 7; pl. 1, fig. 1, pl. 4, fig. 1. Stempffer, 1957a: 169.

This species has been recorded vaguely from Liberia (Stempffer, 1957a), and published records from Sierra Leone, Ghana and the Volta River indicate that its occurrence there is likely. Bethune-Baker also records it from Gabon (subspecies *gabunica* Aurivillius) and Uganda.

Cupidesthes arescopa Bethune-Baker

Cupidesthes arescopa Bethune-Baker, 1910: 9; pl. 1, fig. 2, pl. 4, fig. 2. Stempffer and Bennett, 1956: 511.

This species ranges from Liberia through Nigeria to southern Cameroon and eastward to Uganda (subspecies *orientalis* Stempffer). Our two Liberian females differ markedly from Cameroon and Nigerian females in lacking white lunules in the tornal area of the terminal brown border of the hindwing above and in having a thin sharp fuscous line closing the cell of each wing.

Liberia: Kpain, I; Yamein, I, II; Zor, VIII; Kitoma, VIII (Stempffer and Bennett, 1956); no further data, 1 ♀ (Good); Wanau Forest, 1 ♀, X (Fox).

[**Cupidesthes lithas** H. H. Druce]

Lycaenesthes lithas H. H. Druce, 1890: 24. *Cupidesthes lithas:* Bethune-Baker, 1910: 11; pl. 4, fig. 4.

Though not as yet known from Liberia, this species should eventually be found there. The recorded distribution is from Sierra Leone eastward to Uganda and south to Gabon.

Genus **ANTHENE** Doubleday

This large and difficult genus was revised in 1910 under the synonymous name *Lycaenesthes* by Bethune-Baker who thereby improved considerably our knowledge of the group. Subsequent discoveries of new species and major range extensions, however, have caused it to be once again in need of revision. The genus is overwhelmingly African but a few Indo-Australian species are known, reaching as far as Australia.

Of the several genera recognized by Bethune-Baker I have retained here only *Cupidesthes* (see just above) and *Anthene*, uniting under the latter name all the species assigned by that author to *Neurellipes*, *Neurypexina* and *Triclema*, as well as *Lycaenesthes* (*Anthene*). These genera were separated on the basis of venational characters which are now known to be highly variable and untrustworthy. Nonetheless, as presently constituted, *Anthene* should probably be divided into at least two, and perhaps more, genera. Such division will have to be based on genitalic or other morphologic characters more reliable than venation.

Life history information is available for many of the species in Lamborn *et al.* (1914), Farquharson *et al.* (1922), Pomeroy (1924), Jackson (1937) and Seth-Smith (1938).

Anthene rubricincta rubricincta Holland

Lycaenesthes rubricincta Holland, 1891b: 51. Bethune-Baker, 1910: 20. *Anthene rubricincta:* Clench, 1963a: 47 (*musagetes* Holland, a synonym).
=*Lycaenesthese musagetes* Holland, 1893: 25. Bethune-Baker, 1910: 21; pl. 5, fig. 5. Farquharson *et al.*, 1922: 381. *Anthene musagetes:* Stempffer and Bennett, 1956: 511. Stempffer, 1963b: 425.

The species ranges from Sierra Leone and Guinea eastward to Uganda (subspecies *jeanneli* Stempffer) and south to Angola and Rhodesia (subspecies *anadema* H. H. Druce).

Liberia: Kpain, I, III, IV, X; Kitoma, VIII (Stempffer and Bennett, 1956); Ganta, 1 ♂, II, 3 ♂, III, 2 ♂, VIII; Wanau Forest, 5 ♂, III, 2 ♂, V, 2 ♂, X (Fox).

[**Anthene schoutedeni** Hulstaert]

Lycaenesthes ligures Hewitson (in part): Bethune-Baker, 1910: 23; pl. 5, fig. 7.
Lycaenesthes schoutedeni Hulstaert, 1924: 181. *Anthene schoutedeni:* Stempffer, 1954e: 32-34; fig. 10.

This is a curiously distributed species, extremely close to and formerly confused with *A. ligures* Hewitson (see Stempffer, 1954e). It is known from Abyssinia, Uganda, the Congo, and surprisingly from Sierra Leone. No Liberian specimens are known but in view of its presence in Sierra Leone its occurrence in Liberia is possible.

[**Anthene definita** Butler]

Lycaenesthes definita Butler, 1899a: 342. Bethune-Baker, 1910: 26; pl. 1, figs. 5, 6. *Anthene definita:* Stempffer, 1954c: 349.

This is another species with curious distribution. Its principal range is in eastern Africa from Abyssinia south to the Cape, as well as from Cameroon (northern ?) and Congo (northern ?). Stempffer, however, has recently (1954c) recorded it from the Nimba Mountains in the Republic of Guinea, very close to the Liberian border. Its eventual discovery in Liberia would, therefore, seem quite likely.

Anthene princeps princeps Butler

Lycaenesthes princeps Butler, 1876: 484. Bethune-Baker, 1910: 31; pl. 1, fig. 17, pl. 7, fig. 15. Hawker-Smith, 1929: 232. *Anthene princeps:* Stempffer, 1950: 403. Stempffer and Bennett, 1956: 511.

This widely distributed but uncommon species ranges over almost all of Africa south of the Sahara including (subspecies *smithi* Mabille) Madagascar.

Liberia: Webo (Stempffer, 1950); Kpain, 1 ♂, IX (Stempffer and Bennett, 1956); Wanau Forest, 1 ♂, III (Fox).

Anthene liodes Hewitson

Lycaenesthes liodes Hewitson, 1874c: 349. Bethune-Baker, 1910: 32; pl. 1, fig. 14. *Anthene liodes:* Stempffer and Bennett, 1956: 511.

A widespread but local and uncommon species which ranges from Sierra Leone eastward to Kenya and south to Angola and Natal.

Liberia: Kpain, X; Ganta, III; Saniquellie, VI (Stempffer and Bennett, 1956).

[**Anthene nigropunctata** Bethune-Baker]

Lycaenesthes nigropunctata Bethune-Baker, 1910: 36; pl. 1, fig. 16. *Anthene nigropunctata:* Stempffer, 1944: 53; fig. 6, pl. 1, fig. 4. Stempffer, 1952a: 186.

The species has not as yet been found in Liberia but probably occurs there since it has been reported from Guinea, Ivory Coast, Dahomey and Ubangi-Shari. It also occurs in Tanganyika, Rhodesia and Angola.

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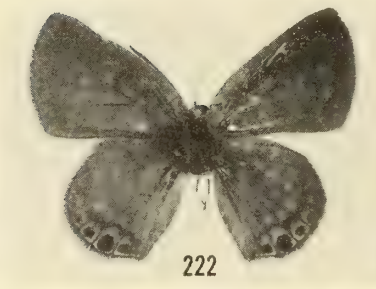
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Anthene amarah orphna new subspecies (Figs. 220-223; compare also 224-227)

Lycaenesthes amarah Guérin: Bethune-Baker, 1910: 38; pl. 7, fig. 16 (in part). Of authors, in part. *Anthene amarah:* Stempffer and Bennett, 1956: 511. cf. *Anthene* (or *Lycaenesthes*) *amarah:* Hawker-Smith, 1929: 232. Jackson, 1937: 225. Seth-Smith, 1938: 153. Stempffer, 1954c: 349.

Bethune-Baker (1910) long ago noted and described this form though he gave it no name and his observations on its distribution differ somewhat from what I have been able to determine from available material.

The present subspecies differs from nominate *amarah* (figs. 224-227) in its much darker color above and below in both sexes. Males of typical *amarah* are glossy, brassy gray-tan above, whereas in *orphna* they are coppery gray-brown; females of nominate *amarah* have a subterminal row of white rings (or half-rings) enclosing fuscous spots, and usually a postmedian row of slightly blurred whitish crescents; in *orphna* these are faint or absent, their location indicated only by lighter brown. On the underside the ground color and markings are all darker in *orphna* than in typical *amarah,* and on the hindwing the costal black spots (one post-basal between Sc and cell, one opposite cell-end, one apical) are proportionately larger.

Holotype. — ♂, Ganta Mission, Liberia, 26-VII-1958 (Fox).

Paratypes. — Same locality and collector: 1 ♂, 1 ♀, 26-VII-1958; 2 ♀, 16-X-1958; 1 ♀, 11-XII-1958. Zorzor: 1 ♂, 3 ♀, 22, 24-XI-1958, (2) 2-XII-1958. Kpain: 1 ♀, 19-V-1955. Harbel: 2 ♀, 9-V-1956, 26-I-1957 (the preceding all collected by Fox). Robert's Field: 6 ♂, 3 ♀, 18, 19-VI-1942 (Thomas). Fisherman's Lake: 1 ♀, 20-V-1942 (Thomas). C. M. Ent. type series no. 501.

Remarks. — I have seen this subspecies only from Liberia. A good series of both sexes before me from Accra, Ghana, all represent nominate *amarah,* though the costal spots of the hindwing below are about as large as in *orphna.* Nominate *amarah* has also been seen from these regions: near Leopoldville, Congo; Mombasa and Laitoketok, Kenya; Cholo, Nyasaland; Elizabethville, Katanga; Bulawayo, Southern Rhodesia; various localities in the Transvaal and Natal; Eritraea. The species — presumably the nominate subspecies — is also known

Fig. 220, *Anthene amarah orphna* new subspecies, Ganta Mission, Liberia, male holotype, upperside (x 2.0). Fig. 221, same specimen, underside. Fig. 222, the same, Zorzor, Liberia, female paratype, upperside (x 2.0). Fig. 223, same specimen, underside. Fig. 224, *Anthene amarah amarah* Guerin, Mombasa, Kenya, male upperside (x 2.0). Fig. 225, same specimen, underside. Fig. 226, the same, same locality, female upperside (x 2.0). Fig. 227, same specimen, underside.

from Abyssinia, Sudan, Egypt and Arabia. Records are published of the occurrence of the species in Upper Volta (Hawker-Smith, 1929), Republic of Guinea (Stempffer, 1954c) and Angola (Bethune-Baker, 1910), but I do not know what subspecies may be represented in these areas.

Bethune-Baker's statement that this dark form prevails "throughout Eastern and Central Equatorial Africa, throughout the whole of the West Coast" is hard to understand. Noteworthy is the utter absence of any *amarah* form in Carnegie Museum from southern Cameroon and Gabon, areas extremely well represented in the collection.

Anthene lunulata lunulata Trimen

Lycaenesthes lunulata Trimen, 1894: 51; pl. 6, fig. 12. Bethune-Baker, 1910: 40; pl. 2, figs. 4, 5, pl. 7, fig. 17. Hawker-Smith, 1929: 232. de Fleury, 1926: 142. *Anthene lunulata:* Seth-Smith, 1938: 153. Stempffer, 1950: 403. Stempffer and Bennett, 1956: 511. Stempffer, 1963b: 425.

A. lunulata is distributed over most of Africa south of the Sahara, with a subspecies (*sanguinea* Bethune-Baker) known from Angola. Liberian specimens are smaller, darker and have less conspicuous tornal lunules on the hindwing, as compared with specimens from eastern and southern Africa, and may ultimately be considered yet another subspecies.

Liberia: Glofakè; Webo (Stempffer, 1950); Kpain, II-IV, VIII, IX; Saniquellie, II (Stempffer and Bennett, 1956); Robert's Field, 4 ♂, 1 ♀, VI (Thomas); Harbel, 1 ♂, V; Kpain, 2 ♂, V (Fox).

[**Anthene levis** Hewitson]

Lycaenesthes levis Hewitson, 1878 [1862-1878]: 221; pl. 91, figs. 21, 22. Bethune-Baker, 1910: 42; pl. 7, fig. 19.

This rather uncommon species has been found in Sierra Leone, southern Cameroon, Gabon and Rhodesia. Though not as yet taken in Liberia, its occurrence there is possible.

Anthene sylvanus sylvanus Drury

Papilio sylvanus Drury, 1773 [1770-1782] 2: 5; pl. 3, figs. 2, 3. *Lycaenesthes sylvanus:* Karsch, 1893: 229. *Lycaenesthes silvanus:* Bethune-Baker, 1910: 42; pl. 8, fig. 20. *Anthene sylvanus:* Stempffer and Bennett, 1956: 511. Stempffer, 1963b: 426.

The species ranges from Sierra Leone and Guinea eastward through Nigeria to Katanga and Angola. To the east and south it appears to be replaced by *A. lemnos* Hewitson. Stempffer (1954e: 36) has recently described a very distinct subspecies, *niveus,* from the vicinity of Coquilhatville, Congo, a pair of which is at hand from the Sesse Isles, Lake Victoria.

Liberia: Kpain, III, IV, IX; Yamein, I (Stempffer and Bennett, 1956); no further data, 2 ♂, 1 ♀ (Naysmith); Ganta, 1 ♂, 2 ♀, VI, 2 ♀, VII, 2 ♀, X; Wanau Forest, 1 ♀, II, 1 ♀, III, 1 ♀, V, 1 ♀, X; trail near Fisabu, 1 ♀, XII; between Vonjima and Yendamalahoun, 1 ♀, IV (all Fox).

Anthene larydas larydas Cramer

Papilio larydas Cramer, 1780 [1775-1791] 3: 160; pl. 282H. *Lycaenesthes larydas:* Karsch, 1893: 229. Bethune-Baker, 1910: 44; pl. 8, fig. 21. *Anthene larydas:* Stempffer, 1950: 403; 1952c: 148; 1952a: 186; 1954c: 350. Stempffer and Bennett, 1956: 511.

One of the commonest *Anthene* in Liberia, *A. larydas* also occurs over most of the continent south of the Sahara, represented in the eastern and southern areas by the subspecies *kersteni* Gerstäker.

Liberia: Diyala; Ziabli; Mâloubli; Bihai; Penokè; Webo; Kaouyékè; Mâtoukè; Douêkè (Stempffer, 1950); Kpain, I, III, IV, VIII-XI; Bahn, IX; Yamein, I; Sanniquellie, V; Baila, VIII; Kitoma, VIII; Davoyi, I (Stempffer and Bennett, 1956); Harbel, 1 ♂, I, 10 ♂, IV, 5 ♂, V; Kpain, 1 ♂, V; St. Paul River at Zorzor Road, 2 ♂, IV; Zorzor, 1 ♂, 1 ♀, XI; Ganta, 1 ♂, II, 4 ♂, 1 ♀, III, 6 ♂, 1 ♀, V, 1 ♂, VI, 3 ♂, 1 ♀, VII; Wanau Forest, 1 ♂, I, 3 ♂, II, 25 ♂, III, 1 ♂, X; trail to Wozi, 1 ♀, XI; Yendamalahoun, 6 ♂, IV (Fox).

[Anthene crawshayi Butler]

Lycaenesthes crawshayi Butler, 1899a: 342. Bethune-Baker, 1910: 45; pl. 2, fig. 6, pl. 8, fig. 22. Hawker-Smith, 1929: 232. *Anthene crawshayi:* Stempffer, 1954c: 350.

Though not as yet found in Liberia this species may well occur in the savanna areas of the interior. It has been recorded from Sierra Leone, Republic of Guinea and Upper Volta, then from northern Nigeria to Abyssinia and from the latter south to the Katanga and the Rhodesias.

Anthene lysicles Hewitson

Lycaenesthes lysicles Hewitson, 1874c: 348. Bethune-Baker, 1910: 46; pl. 2, fig. 7, pl. 8, fig. 23.

Not previously recorded from Liberia, though long known from Sierra Leone, the species ranges, not commonly, eastward through Nigeria to southern Cameroon, Gabon and Katanga.

Liberia: Harbel, 1 ♀, II; Fish Lake, 1 ♀, XII; trail near Fisabu, 1 ♂, XII; Wanau Forest, 1 ♂, III (Fox).

Anthene lachares Hewitson

Lycaenesthes lachares Hewitson, 1878 [1862-1878]: 225; pl. 91, figs. 33, 34. Bethune-Baker, 1910: 47; pl. 2, fig. 9, pl. 8, fig. 24. *Anthene lachares:* Stempffer and Bennett, 1956: 512.

=*Lycaenesthes lachares* var. *obsolescens* Bethune-Baker, 1910: 48; pl. 2, fig. 8. *Anthene lachares obsolescens:* Stempffer and Bennett, 1956: 512.

This pretty little species ranges from Sierra Leone eastward to Nigeria, Congo, southern Cameroon and Gabon. The male may ("*lachares*") or may not ("*obsolescens*") have an orange discal patch on the forewing above, or any stage between. Specimens with the patch absent seem to predominate.

Liberia: Kpain, I, II ("*lachares*"), I-IV ("*obsolescens*"); Yamein, I ("*obsolescens*") (Stempffer and Bennett, 1956); no further data, 1 ♂ ("*obsolescens*") (Good); Ganta, 1 ♂, II ("*obsolescens*"); Wanau Forest, 1 ♂, III ("*obsolescens*"), 1 ♂, III ("*lachares*"), 1 ♀, V (Fox).

Anthene bitje Bethune-Baker

Lycaenesthes bitje Bethune-Baker, 1910: 50.

A new record for Liberia and for Upper Guinea, the species previously was known only from the Cameroon and Gabon.

Liberia: no further data, 1 ♀ (Good); St. Paul River at Zorzor Road, 1 ♀, III (Fox).

[**Anthene radiata** Bethune-Baker]

Lycaenesthes radiata Bethune-Baker, 1910: 55; pl. 2, fig. 15.

The species was described from Sierra Leone and may possibly occur in Liberia, though no specimens have as yet been found.

Anthene species, near **mahota** Grose-Smith

Liberia: St. Paul River at Zorzor Road, 1 ♀, 18-V-1955 (Fox).

This single, badly worn female I cannot determine at all. It is closely related to *mahota* Grose-Smith (1887: 65; see also Smith and Kirby, 1893 [1887-1902] (XXII): 99; figs. 7, 8 but not 9, 10), and also to *ngoko* Stempffer (1962: 1174; figs. 70-72). I have not seen the female of *mahota* (the supposed female, illustrated in figs. 9 and 10 of Grose-Smith and Kirby, is actually the female of *erythropoecila* Holland) and believe it to be still unknown, but if it resembles the male below as most females in this group do, then it should have the distinctive white patch on the forewing below the cell-end, characteristic of male *mahota*.

The female of *ngoko* is not described. A short series is at hand, including both sexes, from Metet, southern Cameroon. The female has the wings more rounded; forewing with orange patch larger, not reaching 1A, extending into the posterior distal corner of the cell and reaching just above M_1, distal border rounded, closest to termen at about Cu_1 (about 3 mm. distant). Hindwing much as in the male but postmedian orange smaller, subtriangular in shape with a tooth projecting costad to M_2 or M_1. Underside as in male but ground a little darker, the postmedian band of forewing a little more disjunct and without the large whitened area between postmedian and subterminal lines in M_3-Cu_2.

The present Liberian female may be described briefly as follows: discal fulvous patch of forewing above pale (wear ?), shaped about as in male *ngoko*, not entering cell at all. Hindwing with a subterminal row of connected pale orange lunules, each enclosing a black spot. The lunules and the regularly decreasing spots extend costad to about Rs or M_1; basad of these lunules is a brownish rather thick line, edged basad by a whitish (not ochreous or orange) line from tornus (or near it: this area of wing is broken and torn) to apex; remainder of wing brown. The underside ground is grayish as in *mahota* (not the brownish shade of female *ngoko*) and the pattern conforms rather closely with that of male *mahota*, including the jet black postmedian spot in Sc-Rs, save that it lacks the white patch below the cell-end and the third white band or line from termen is thick (nearly 1 mm.) and continuous, not thread-like and disjunct as in *mahota*.

Anthene mahota Grose-Smith

Lycaenesthes mahota Grose-Smith, 1887: 65. Bethune-Baker, 1910: 59. *Anthene mahota:* Stempffer and Bennett, 1956: 512.

This species also occurs from southern Nigeria to Rio Muni and eastward into the Congo. It has long been reported from Delagoa Bay (Lourenço Marques, Mozambique), a record that seems to need confirmation.

Liberia: Yamein, 1 ♂, I (Stempffer and Bennett, 1956). Possibly the female described just above belongs here.

[**Anthene aurea** Bethune-Baker]

Lycaenesthes aura Bethune-Baker, 1910: 59; pl. 3, fig. 2.

The species was described from Ghana and may possibly occur in Liberia though so far not taken there.

[**Anthene scintillula** Holland]

Lycaenesthes scintillula Holland, 1891b: 50. Bethune-Baker, 1910: 60; pl. 3, fig. 3, pl. 10, figs. 30-31.

The species ranges from Sierra Leone to western Uganda and south to Gabon; no Liberian specimens are as yet known.

The section of *Anthene* that includes the "orange" species such as *scintillula* is still very inadequately known, a particularly troublesome difficulty being the correct association of the sexes.

There have been three speculative attempts to determine the female of *scintillula.*

(1) Holland (1893: 26) described a female purporting to be of this species which Bethune-Baker (1910) has correctly denied. The specimen is before me and seems to be of a species related to but distinct from *lusones* Hewitson in another group of the genus.

(2) Grose-Smith and Kirby (1893 [1887-1902] (XXII): 98; figs. 5, 6) described and figured a specimen supposedly the female of *scintillula,* also correctly denied by Bethune-Baker. He believed this figure to represent the female of another species in the group, *lychnaptes* Holland, but I cannot accept this. There are three specimens at hand from southern Cameroon and Rio Muni which match Grose-Smith and Kirby's figures 5 and 6 very closely, but they are neither females nor

lychnaptes. They appear to be males of yet another species, *erythropoecila* Holland (1893: 26). Holland described this last from specimens he claimed to be males and a similar specimen was illustrated by Bethune-Baker (1910: 3; fig. 1), also as the male of *erythropoecila,* yet examination of Holland's types shows them to be females. The curious rufous or orange spot just below cell-end on the forewing below is characteristic of this species and permits the present association of the sexes.

(3) Bethune-Baker described the female of *scintillula* and his description fits well a single female before me from southern Cameroon which I believe to be the true female of *scintillula.*

Anthene juba Fabricius

Papilio juba Fabricius, 1787, 2: 82. *Lampides juba:* Butler, 1869b: 163 (but *not* pl. 2, fig. 9; see below). *Cupido juba:* Karsch, 1893: 227 (but see under *Uranothauma falkensteini* below). *Lycaenesthes juba:* Bethune-Baker, 1910: 63; pl. 10, fig. 32. Aurivillius, 1924 [1908-1925]: 456; pl. 72h.

The species ranges from Sierra Leone, the type locality, eastward to the Cameroon.

Liberia: Kpain, IX; "Wanan" [Wanau], IV (Stempffer and Bennett, 1956).

Butler (1869b: 2, fig. 9) illustrated the underside of a species he called *juba,* but this figure actually represents *Uranothauma falkensteini* Dewitz, a species the Fabrician description does not fit at all.

Anthene lyzanius Hewitson

Lycaenesthes lyzanius Hewitson, 1874b: 36. *Neurypexina lyzanius:* Bethune-Baker, 1910: 64; pl. 11, figs. 33-34. Stempffer and Bennett, 1956: 512 (as *lyzianus,* typographical error).

Liberian specimens, compared with material from southern Cameroon and Gabon, average a little smaller, the females markedly darker above and both sexes below have the white lines thicker. The difference is not as striking as it sounds, for there is much overlap and extensive variation in both areas. Curiously, a female from Bafia, Cameroon (near the Nigerian border) is about as dark above as Liberian females but the lines below are thinner than any Cameroon or Gabon females seen.

The species ranges from Sierra Leone eastward to Cameroon and the Congo, south to Angola.

Liberia: Kpain, II, III (Stempffer and Bennett, 1956); no further data, 2 ♂ (Good); Harbel, 2 ♂, I, 3 ♂, II, 1 ♂, 1 ♀, III, 2 ♂, IV, 1 ♂, V, 1 ♀, VII, 1 ♂, X, 3 ♂, XII; Bomi Hills, 2 ♂, 1 ♀, IV; Wanau Forest, 1 ♀, V (all Fox).

Anthene chryseostictus Bethune-Baker

Neurellipes chryseostictus Bethune-Baker, 1910: 67; pl. 3, fig. 5, pl. 12, figs. 37, 38. Stempffer and Bennett, 1956: 512. *Anthene* (*Neurellipes*) *chryseostictus:* Stempffer, 1963b: 426.

The species ranges from Sierra Leone and Republic of Guinea eastward to Cameroon.

Liberia: Kpain, II-IV, VIII, IX; Vaa, VIII; Yamein, I (Stempffer and Bennett, 1956); Zorzor, 1 ♀, XI (Fox).

[**Anthene lusones** Hewitson]

Lycaenesthes lusones Hewitson, 1874c: 347. *Neurellipes lusones:* Bethune-Baker, 1910: 68; pl. 3, fig. 6, pl. 12, figs. 35-36. Stempffer, 1954c: 350.

This species is not as yet recorded from Liberia. It is known to occur from Sierra Leone and the Republic of Guinea eastward to the Congo and south to Angola.

[**Anthene staudingeri** Grose-Smith and Kirby]

Lycaenesthes staudingeri Grose-Smith and Kirby, 1894 [1887-1902] (XXIV): 112; figs. 9, 10. *Neurellipes staudingeri:* Bethune-Baker, 1910: 69; pl. 11, fig. 39.

Possibly occurring in Liberia, though no specimens have as yet been found, the species is known from Sierra Leone to Uganda, Gabon and the Congo.

Anthene rufoplagata Bethune-Baker

Triclema rufoplagata Bethune-Baker, 1910: 72; pl. 3, fig. 8, pl. 11, fig. 40.

Not previously known from Liberia, this apparently rare species has been recorded from Sierra Leone (type locality), Togo and the Congo; there is also a male in Carnegie Museum from Gabon.

Liberia: Wanau Forest, 1 ♂, III (Fox).

Anthene hades Bethune-Baker

Triclema hades Bethune-Baker, 1910: 74; pl. 3, fig. 9, pl. 11, fig. 41. Stempffer, 1952: 187. *Anthene* (*Triclema*) *hades:* Stempffer, 1963b: 426.

Not previously known from Liberia, though recorded from Sierra Leone and the Republic of Guinea eastward to Gabon and the Congo.

Liberia: Harbel, 1 ♂, II; Wanau Forest, 1 ♂, 1 ♀, II, 1 ♂,V; Yendamalahoun, 1 ♂, IV (Fox).

Anthene obscura Bethune-Baker

Triclema obscura Bethune-Baker, 1910: 82. Stempffer and Bennett, 1956: 512.

This species ranges eastward to the eastern Congo, south to Gabon.

Liberia: Kpain, I, IX; Davoyi, I (Stempffer and Bennett, 1956).

[**Anthene phoenicis** Karsch]

Triclema phoenicis Karsch, 1893: 228. Bethune-Baker, 1910: 75; pl. 3, fig. 10, pl. 13, fig. 42.

The species, which appears to be quite rare, ranges from Sierra Leone to Uganda, south to Cameroon and the Rhodesias.

[**Anthene kamilila** Bethune-Baker]

Triclema kamilila Bethune-Baker, 1910: 76; pl. 3, fig. 11, pl. 13, fig. 43.

This species is known from Sierra Leone and western Kenya, a strange and surely incomplete range. It may be found eventually in Liberia, but no specimens are so far known.

[**Anthene maesseni** Stempffer]

Anthene (*Triclema*) *maesseni* Stempffer, 1957b: 223; fig. 7.

This species was described from Gambia and Togo. To date no Liberian specimens are known, but the species could well occur there.

[**Anthene marshalli** Bethune-Baker]

Lycaenesthes marshalli Bethune-Baker, 1903: 332. *Triclema marshalli:* Bethune-Baker, 1910: 79; pl. 3, fig. 12. Hawker-Smith, 1929: 232.

The species ranges from Sierra Leone and Upper Volta eastward to Nigeria. No Liberian specimens are known as yet.

Fig. 228, *Anthene fasciata* Aurivillius (?), Zorzor, Liberia, male underside (x 2.4).
Fig. 229, *Anthene fasciata* Aurivillius, Batanga, Cameroon, male underside (x 2.2).

Anthene lamias Hewitson

Lycaenesthes lamias Hewitson, 1878 [1862-1878]: 227; pl. 91, figs. 25, 26. *Triclema lamias:* Bethune-Baker, 1910: 79; pl. 3, fig. 14, pl. 13, fig. 44.

The species is known to occur from Sierra Leone eastward to Cameroon and Gabon. It has not heretofore been reported from Liberia.

Liberia: Harbel, 1 ♂, I, 1 ♀, V; Zorzor, 1 ♂, XI (Fox).

[Anthene lucretilis Hewitson]

Lycaenesthes lucretilis Hewitson, 1874c: 349. *Triclema lucretilis:* Bethune-Baker, 1910: 80.

Not as yet found in Liberia, the species is recorded from Sierra Leone, Gabon and Angola and specimens are at hand also from southern Cameroon and western Uganda.

Anthene fasciata Aurivillius (Fig. 228, compare also 229)

Lycaenesthes fasciatus Aurivillius, 1895b: 218. *Triclema fasciata:* Bethune-Baker, 1910: 81; pl. 3, figs. 15, 16, pl. 8, fig. 45.
=? *Lycaenesthes subnitens* Bethune-Baker, 1903: 332.

Newly recorded for Liberia, the species occurs from Sierra Leone to southern Cameroon and the Congo.

Liberia: Zorzor, 1 ♂, XI; Wanau Forest, 1 ♂, II (Fox).

There is some question as to the identity of these specimens. They both show, on the underside of the hindwing, the inner edge of the cell-end bar (a short white streak) fully separate from, though close and nearly parallel to, the outer white edge of the basal band (fig. 228). In a long series of males from southern Cameroon, nearly all

show the two completely fused, so that the outer white edge of the basal band merely looks thicker where it crosses the cell (fig. 229).

Genus **PHLYARIA** Karsch

This small genus, closely allied to *Uranothauma,* consists of but two species: *heritsia* Hewitson (see Tite, 1958), which occurs no farther west than southern Nigeria, and the species discussed below. Jackson (1957) has given information on the early stages.

Phlyaria cyara stactalla Karsch

Phlyaria stactalla Karsch, 1895: 302. *Phlyaria cyara stactalla:* Stempffer, 1942: 119. Stempffer, 1952c: 148; 1954c: 350. Stempffer and Bennett, 1956: 512.

The species *cyara* ranges from Guinea and Sierra Leone eastward to Uganda and Kenya; subspecies *stactalla* occurs as far east as Nigeria where it is apparently replaced by nominate *cyara;* in the eastern end of the species range is found subspecies *tenuimarginatus* Grünberg.

Liberia: Kpain, III, IV; Wanan [Wanau], IV; Bahn, VIII (Stempffer and Bennett, 1956); Ganta, 1 ♂, III, 2 ♂, VI, 1 ♂, VII; Yendamalahoun, 1 ♂, IV (Fox).

Genus **URANOTHAUMA** Butler

Most of the eleven or so species of *Uranothauma* are dwellers in savannas and the genus reaches its peak development in eastern Africa, from Kenya and Uganda south to the Rhodesias and thence westward into Angola. One species, however, appears to have become adapted to rain forest conditions. *U. falkensteini* occurs widely and commonly in such regions throughout West Africa. Information on the life histories of several species is given by Jackson (1937).

Uranothauma falkensteini Dewitz

Lampides juba Fabricius: Butler, 1869: pl. 2, fig. 9; and of authors.
Plebeius falkensteini Dewitz, 1879: 204; pl. 25, fig. 5. *Uranothauma falkensteini:* Stempffer, 1950: 403; 1952c: 148; 1954c: 350. Stempffer and Bennett, 1956: 512.

This species ranges from Sierra Leone and Guinea eastward to Kenya and Abyssinia, south to the Rhodesias. Butler's erroneous figuring of a specimen of this species as *juba* Fabricius was responsible

for several references to *falkensteini* under that name (as probably Karsch, 1893: 227).

Liberia: Penokè; Nianiou; Tchien (Stempffer, 1950); Kpain, IV, VIII, IX; Zor, VIII; Dingamo, VIII; Venntown, VIII; Kitoma, VIII (Stempffer and Bennett, 1956); trail near Fisabu, 1 ♂, XII; Ganta, 3 ♂, III; Wanau Forest, 2 ♂, III, 3 ♂, X; Yendamalahoun, 2 ♂, IV; between Vonjima and Yendamalahoun, 2 ♂, IV (Fox).

[**Uranothauma poggei** Dewitz]

Plebeius poggei Dewitz, 1879: 205; pl. 26, fig. 7. *Uranothauma poggei:* Stempffer, 1963b: 426.

Until Stempffer's paper, this species was known to occur only from Angola eastward to the Rhodesias and north to the Kivu area. Its widely disjunct occurrence in the Mt. Nimba region is most interesting and recalls the similarly disjunct eastern African species found in the mountains of Adamawa along the Nigeria-Cameroon border. Possibly, like many of the latter, it is associated with a mountain grassland ecology. No Liberian specimens are known.

Genus **CACYREUS** Butler

Of the half dozen known species of this purely African genus, only two reach Upper Guinea. No complete review of the group has been published but Stempffer's very useful survey (1938: 194-200) omits only the Madagascan *darius* Mabille. Jackson (1937) has discussed the life history of a species of the genus.

Cacyreus lingeus Stoll

Papilio lingeus Stoll, 1784 [1775-1791] 4: 176; pl. 379, figs. F, G. *Cacyreus lingeus:* Stempffer, 1938: 195; fig. 18; 1950: 403; 1952c: 148; 1952a: 187; 1954c: 350. Stempffer and Bennett, 1956: 512.

C. lingeus occurs over virtually all of Africa south of the Sahara and is even known from well into the desert. Though the commonest member of the genus, it appears to be relatively infrequent in Upper Guinea and possibly flies only part of the year (see records below). Records of *lingeus* published prior to Stempffer's 1936 and 1938 papers must be ignored as they may deal with any of three species (*lingeus* Cramer, *virilis* Aurivillius and *audeoudi* Stempffer).

Females of *lingeus* show an interesting dimorphism. On the forewing above, most of them have a small triangular fuscous patch in the bases of interspaces M_3-Cu_1-Cu_2, immediately below the cell-end. This patch is missing in about 18% of our Cameroon females and about 20% of our Gabonese females. Material from eastern localities (Ruanda-Urundi, Uganda, Kenya) is too limited for reliable statistics but both forms are present there and those with the spot present outnumber those that lack it.

Liberia: Webo; Touzon; Barclayville (Stempffer, 1950); Kpain, VIII, IX; Bahn, VIII; Venntown, VIII (Stempffer and Bennett, 1956); Zorzor, 1 ♂, XI (Fox).

Cacyreus audeoudi Stempffer

Cacyreus audeoudi Stempffer, 1936b: 285; 1952: 148; 1954c: 351. Stempffer and Bennett, 1956: 512.

The species ranges from Guinea and Liberia eastward through Cameroon to Kenya and south to Tanganyika, Katanga and Gabon.

Liberia: Kpain, VIII; Bahn, VIII (Stempffer and Bennett, 1956).

Genus **TARUCUS** Moore

No species of this difficult genus is known to occur in Liberia, the nearest records being from Senegal, Upper Volta and Dahomey. These small blues are essentially desert or subdesert species and their occurrence in Liberia is considered doubtful. I include them because of the possibility of their eventually being found in the savannas of the interior, a possibility strengthened somewhat by the presence in the Carnegie Museum collection of several specimens (unfortunately all females) from southern Cameroon. All of the species listed below require examination of the male genitalia for reliable determination and ranges are still imperfectly known. The genus was revised by Bethune-Baker (1918), and Stempffer (1942) has provided some valuable remarks and figures.

[Tarucus balkanicus Freyer]

Lycaena balkanica Freyer, 1844 [1833-1858]: 63; pl. 421, figs. 1, 2. *Tarucus balkanica:* Bethune-Baker, 1918: 277; pl. 14, figs. 3-3b, pl. 15, fig. 3, pl. 19, figs. 21-22. Stempffer, 1942: 120; fig. 3.

This essentially Asiatic species extends westward (so far as known) to Algeria and the Sudan.

[**Tarucus legrasi** Stempffer]

Tarucus legrasi Stempffer, 1948: 194; figs. 4, 5. Condamin, 1956: 201.

The species ranges (again, so far as known) from Senegal to Uganda and northern Kenya.

[**Tarucus rosaceus** Austaut]

Tarucus rosacea Austaut: Condamin, 1956: 202. Stempffer, 1957a: 210.
=*Tarucus mediterraneae* Bethune-Baker, 1918: 281; pl. 14, figs. 7, 7b, pl. 16, fig. 7, pl. 19, fig. 26. Hawker-Smith, 1929: 232. Stempffer, 1942: 120; fig. 2 [incorrectly as *mediterraneus*].

The species ranges from North Africa south to Senegal, northern Nigeria and Kenya; it also occurs in western Asia.

I have not been able to locate the original reference to the name *rosacea* but accept its identity with, and priority over, *mediterraneae* on the authority of Stempffer (1957a).

[**Tarucus ungemachi** Stempffer]

Tarucus ungemachi Stempffer, 1942: 121; fig. 4. Condamin, 1956: 200.

The species is known to occur from Abyssinia to Senegal, south in the east to Kenya.

[**Tarucus theophrastus** Fabricius]

Hesperia thophrastus Fabricius, 1793 [1793-1794] 3: 281.
Tarucus theophrastus: Bethune-Baker, 1918: 286; pl. 14, figs. 12-12a, pl. 16, fig. 12, pl. 18, pl. 20, figs. 29, 32-34. de Fleury, 1926: 142. Hawker-Smith, 1929: 232. Stempffer, 1942: 120; fig. 1. Condamin, 1956: 201.

The species ranges from southern Europe to India and in Africa from the Mediterranean Sea south to Senegal, northern Nigeria and Abyssinia.

Genus **CASTALIUS** Hübner

The species of this genus are principally confined to eastern and southern Africa, only *carana* being widespread in the rain forest country. Jackson (1937) has described the early stages of two species.

Castalius carana kontu Karsch

Cupido kontu Karsch, 1893: 227. H. H. Druce, 1910a: 9, 24; pl. 3, figs. 8, 8a. *Cupido carana kontu:* Aurivillius, 1898: 364; 1924 [1908-1925]: 467; pl. 73c.

Castalius carana Hewitson: de Fleury, 1926: 141. Stempffer, 1950: 404; 1952c: 148; 1954c: 351. Stempffer and Bennett, 1956: 512.

The species ranges from Guinea and Liberia eastward to Uganda and south to Angola and the Katanga. The subspecies *kontu* is confined to Occidental Africa; nominate *carana* (described from Angola) is supposed to occupy the remainder of the range, but an examination of Hewitson's figure (1876 [1856-1876] 5: [88]; pl. [46], fig. 6) shows certain differences when compared with specimens from Cameroon and Gabon. However, I have seen no Angolese material.

Liberia: Douéké (Stempffer, 1950); Kpain, II, IV, VI, VIII, IX; Venntown, VIII; Vaa, VIII; Dingamo, VIII; Sanniquellie, V (Stempffer and Bennett, 1956); trail near Fisabu, 2 ♂, XII; Zorzor, 4 ♂, XI; Kpain, 1 ♀, V; Ganta, 1 ♂, XI; Wanau Forest, 3 ♂, III, 4 ♂, X; Yendamalahoun, 1 ♂, IV (Fox).

[**Castalius cretosus nodieri** Oberthür]

Lycaena nodieri Oberthür, 1883: xii. *Cupido cretosus nodieri:* Aurivillius, 1924 [1908-1925]: 467.

Castalius cretosus Butler: Hawker-Smith, 1929: 232. Condamin, 1956: 202.

This desert, subdesert or savanna species ranges from Senegal eastward through Upper Volta to the White Nile and Somaliland in several still poorly defined subspecies. It has not been taken in Liberia but just possibly may occur in the inland savanna environments.

Genus **LAMPIDES** Hübner

This monotypic genus is found throughout the Old World tropics and subtropics from southern France to Australia, from Ascension Island to the Hawaiians.

Lampides baeticus Linnaeus

Papilio baeticus Linné, 1767: 789. *Lampides baeticus:* Hawker-Smith, 1929: 232. Condamin, 1961b: 253.

This appears to be the first record of the species for Liberia.

L. baeticus, though occurring over most of Africa, including Madagascar, is strangely scarce in western Occidental Africa. It is not mentioned, for example, in Stempffer (1950, Liberia), Stempffer and Bennett (1956, Liberia), Stempffer (1952a, Togo and Dahomey), any of Stempffer's reports on the Nimba Mountains region (1952c, 1954c, 1963b); nor is it to be found in Karsch (1893, Togo) or Schaus and Clements (1893, Sierra Leone).

The present specimens, as well as a pair at hand from Sierra Leone and a long series from Accra, Ghana, testify to its presence in the coastal regions, while the cited papers of Hawker-Smith and Condamin show that it occurs also in the drier interior — in Upper Volta and Senegal, respectively.

Though usually described as occurring all over Africa in abundance, available data suggest that it tends to be absent or very rare in rain forest regions. The points mentioned above bear this out, and there are but few specimens of the species at hand from either southern Cameroon or Gabon, rain forest areas from which Carnegie Museum has a very large representation of material.

I suspect from this, from other material seen, and from the literature (compare especially the remarks in Swanepoel, 1953: 82), that *baeticus* favors open country and possibly it is to be found in the rain forest regions only where clearings exist, whether natural or man-made.

Liberia: no further data, 2 ♂ (Naysmith); Harbel, 1 ♂, 2 ♀, IX, 2 ♂, 1 ♀, XII; Zorzor, 2 ♂, 2 ♀, XI (Fox).

Genus **LEPTOTES** Scudder

Leptotes Scudder, 1876: 124. Type-species: *Lycaena theonus* Lucas, 1857 (West Indies), by original designation.

=*Cyclyrius* Butler, 1896: 830. Type-species: *Polyommatus webbianus* Brullé, 1836 (Teneriffe), by original designation.

=*Syntarucus* Butler, 1900: 929. Type-species: *Papilio telicanus* Lang, 1789 (Europe), by original designation.

=*Syntarucoides* Kay, 1904: 190. Type-species: *Papilio cassius* Cramer, 1775 (South America), by original designation.

The above synonymy is simply formal recognition of the relationships that Stempffer and others had noticed and discussed years ago (see particularly Stempffer, 1942: 126-127). Study of the genitalia,

androconia and other structural details of the majority of the known species shows that they should indeed be placed all in a single genus divided into a number of subordinate species groups. As thus delimited the genus is holotropical and, if the species be brought together, remarkably uniform in general facies. The most striking departure in appearance is *L. webbianus* Brullé of Teneriffe and its close relative(!) *L. callanga* Dyar from Peru.

Leptotes telicanus Lang (subspecies ?)

Papilio telicanus Lang, 1789: 47. *Cupido telicanus:* Karsch, 1893: 226. *Syntarucus telicanus:* Stempffer, 1952a: 187; 1954c: 351. Condamin, 1956: 200.
Tarucus plinius (Fabricius): de Fleury, 1926: 142. *Syntarucus telicanus plinius:* Aurivillius, 1924 [1908-1925]: 474. Hawker-Smith, 1929: 232.

Surprisingly, this appears to be a new record for Liberia though specimens are known from surrounding areas: Sierra Leone (Schaus and Clements, 1893:11), Senegal (Condamin, 1956), and Nimba Mountains region (Stempffer, 1954c), Dahomey (Stempffer, 1952a) and, of course, other parts of Africa as well as northern Africa and southern Europe. Male genitalia of three Liberian males (two from Harbel, one from Cape Palmas) have been examined and all are *telicanus.*

African specimens differ considerably from those of southern Europe and northern Africa — larger, paler, brighter, the females with extensive white above — but I do not know what name should be applied to them. It is possible that *cassioides* Capronnier (1889: cxxi) will apply, but until the type of this and other names can be examined genitalically it is impossible to be sure. Indeed, as Aurivillius (1898: 364) indicates, this name may not even refer to a *Leptotes.* Aurivillius later (1924, *in* Seitz) applied the name *plinius* Fabricius to African *telicanus,* but this would appear to be incorrect, as that name is now generally used for an Indo-Australian species which is quite different and, to my knowledge, does not occur in Africa at all despite its listing in Peters (1952: 115).

Liberia: no further data, 2 ♂, 2 ♀ (Naysmith); Cape Palmas, 1 ♂, IX (Good); Fisherman's Lake, 1 ♂, V (Thomas); Harbel, 3 ♂, 1 ♀, I, 1 ♂, II, 1 ♀, IV, 2 ♂, 2 ♀, XII; Wanau Forest, 1 ♂, X (Fox).

[**Leptotes brevidentatus** Tite]

Syntarucus brevidentatus Tite, 1958: 189; text fig. A, pl. 2, figs. 1-4.

This recently described species is reported by its author from Arabia to Ghana and south to the Cape, thus including most of Africa. No Liberian specimens are as yet known, but its occurrence there is clearly to be suspected. This is possibly the same species as that recorded by Stempffer (1957a: 197) as *Syntarucus pulcher* Murray (*Lycaena pulchra* Murray, 1874: 524; pl. 10, figs. 7, 8).

[**Leptotes jeanneli** Stempffer]

Syntarucus jeanneli Stempffer, 1935: 232; fig. 7, pl. 9, fig. 6; 1952a: 187; 1952b: 116. Condamin, 1956: 200.

There are no known Liberian specimens but the species is recorded from Guinea east to Abyssinia and south over almost the whole continent.

[**Leptotes babaulti** Stempffer]

Syntarucus babaulti Stempffer, 1935: 235; fig. 9, pl. 9, fig. 7; 1952a: 187; 1952b: 116; 1954c: 351. Condamin, 1956: 200.

This is another species of which no Liberian specimens are known but whose recorded distribution makes it a likely inhabitant of the country. The species ranges from Guinea eastward to Abyssinia, south to Kenya.

Genus **PETRELAEA** Toxopeus

The genus *Nacaduba* Moore and its relatives, a complex of closely allied genera recently reviewed by Tite (1963), is almost exclusively Indo-Australian. The present genus is a remarkable exception. One species (*dana* de Niceville) occurs from the Himalayas south and east through the East Indies as far as the Solomon Islands, while the other two species are African: *aethiops* Mabille (which does not occur in Occidental Africa) and the following.

Petrelaea sichela sichela Wallengren

Lycaena sichela Wallengren, 1857: 37. *Cupido sichela:* Karsch, 1893: 227. *Orthomiella sichela:* Karsch, 1895: 297. *Nacaduba sichela:* Hawker-Smith,

1929: 232. Carpenter, 1935: 399. *Pseudonacaduba sichela:* Stempffer, 1942: 130. *Petraleia* [*sic*] *sichela:* Stempffer, 1954c: 351. *Petralaea* [*sic*] *sichela:* Stempffer and Bennett, 1956: 512. *Petrelaea sichela:* Condamin, 1956: 201.

The species ranges from Senegal, Sierra Leone and Guinea east to Abyssinia and south to Angola, the Katanga, Transvaal, Natal and western Cape Province. There is also a subspecies on Madagascar.

Stempffer (1942), unaware of Toxopeus' genus, erected *Pseudonacaduba* for *aethiops* (type) and the present species. Peters (1952: 115), so far as I am aware, was the first to correct the synonymy. *P. sichela* is very close in appearance to the Indo-Australian *dana,* but according to Corbet (1938: 143; 126) the genitalia of the two are distinct.

Liberia: Karnwin, 1 ♂, VIII (Stempffer and Bennett, 1956); Wanau Forest, 1 ♂, III; Yendamalahoun, 1 ♂, IV (Fox).

Genus **LEPIDOCHRYSOPS** Hedicke

This large and difficult genus was revised under the name *Neochrysops* by Bethune-Baker in 1923 and now, forty years later, it is again badly in need of revision. Most of the species are found in eastern and southern Africa, with but a small handful occurring in the rain forest regions of western Africa.

[**Lepidochrysops parsimon** Fabricius]

Papilio parsimon Fabricius, 1775: 526. *Neochrysops parsimon:* Bethune-Baker, 1923: 317; pl. 12, fig. 19, pl. 20, fig. 32, pl. 29, fig. 32. *Lepidochrysops parsimon:* Stempffer, 1957a: 199; figs. 280-283.
Papilio celaeus Cramer: of authors.
Cupido (*Lepidochrysops*) *loveni* Aurivillius: Stempffer [1949]: 84.

This species is included here as possibly occurring in Liberia on the authority of Bethune-Baker (1923) who records it from Sierra Leone. I have seen no Upper Guinea specimens but Stempffer (1957a) records it also from Togo and Nigeria. The species ranges east to Uganda and Kenya and south to Angola and the Rhodesias.

[**Lepidochrysops victoriae** Karsch]

Cupido victoriae Karsch, 1895: 300. H. H. Druce, 1910a: 19, 34; pl. 8, figs. 2, 2a. *Lepidochrysops victoriae:* Stempffer, 1952a: 188.

This species, otherwise known only from Kenya and Uganda, has been recorded by Stempffer from Dahomey. Although at present the chance seems slender, the species could eventually be found in Liberia.

[**Lepidochrysops quassi** Karsch]

Polyommatus quassi Karsch, 1895: 305. *Cupido quassi:* H. H. Druce, 1910a: 19, 34; pl. 8, figs. 3, 3a. *Lepidochrysops quassi:* Stempffer, 1952a: 188.
Cupido negus Felder: Karsch, 1893: 226.
=*Catochrysops phasma* Butler, 1901a: 290. Farquharson *et al.*, 1922: 392.

No Liberian specimens are known as yet but the species possibly could occur there. It is known from Togo east to Nigeria.

Lepidochrysops synchrematiza Bethune-Baker

Neochrysops synchrematiza Bethune-Baker, 1923: 323; pl. 14, fig. 1, pl. 20, fig. 35, pl. 29, fig. 35. *Lepidochrysops synchrematiza:* Stempffer, 1952c: 149; 1952a: 188; 1954c: 351; 1954e: 41. Stempffer and Bennett, 1956: 512.
Lycaena (or *Cupido*) *parsimon* Fabricius: of authors.
=*Neochrysops sylvius* Hulstaert, 1924: 138.

Liberia: Kpain, VII, VIII, X; Baila, VIII; Digama, VIII (Stempffer and Bennett, 1956); Cape Palmas, 1 ♀, IX (Good); Ganta, 1 ♂ (Leland).

[**Lepidochrysops polydialecta** Bethune-Baker]

Neochrysops polydialecta Bethune-Baker, 1923: 329; pl. 14, fig. 5, pl. 21, fig. 39, pl. 29, fig. 39. *Lepidochrysops polydialecta:* Stempffer, 1957a: 201; figs. 288, 289.

No Liberian specimens are known but the species is recorded from Senegal to Sudan and Kenya.

Genus **EUCHRYSOPS** Butler

The species of this genus are generally similar in appearance to those of the preceding, though on the whole somewhat smaller in size. Whereas *Lepidochrysops* is confined to Africa, one species of *Euchrysops* (*cnejus* Fabricius) is entirely Indo-Australian and one other (*malathana* Boisduval, see below) reaches Arabia.

[**Euchrysops barkeri** Trimen]

Lycaena barkeri Trimen, 1893: 129; pl. 8, figs. 5, 6. *Euchrysops barkeri:* Bethune-Baker, 1923: 347; pl. 23, fig. 51, pl. 30, fig. 51.

This species ranges from Abyssinia to South Africa and west to Angola. Bethune-Baker also records it from Sierra Leone on the strength of which I include it here as possibly to be found (interior savannas ?) in Liberia.

Euchrysops albistriatus albistriatus Capronnier

Lycaena albistriatus Capronnier, 1889: cxxi. *Euchrysops albistriatus:* Bethune-Baker, 1923: 353; pl. 12, fig. 12, pl. 24, fig. 55, pl. 31, fig. 55.

This species was not previously known from Liberia. It ranges from Sierra Leone eastward to Abyssinia, Kenya and Uganda (ssp. *severini* Hulstaert), and south to the Congo River.

Liberia: Zorzor, 1 ♀, XI; trail near Fisabu, 2 ♂, 1 ♀, XII (Fox).

Euchrysops malathana Boisduval

Lycaena malathana Boisduval, 1833b: 25. *Euchrysops malathana:* Bethune-Baker, 1923: 358; pl. 25, fig. 60, pl. 31, fig. 59. Hawker-Smith, 1929: 232 (including variety *nilotica* Aurivillius). Stempffer, 1950: 404; 1954c: 352. Stempffer and Bennett, 1956: 513.
=*Cupido asopus* Hopffer: Karsch, 1893: 226.

This species occurs all over Africa (including Madagascar) from the Cape north to Senegal and Abyssinia and beyond into Arabia and is everywhere common. Dates on the records below suggest that the major flight period is from December to May.

Liberia: Pata; left bank of Cavalla River (Ivory Coast) (Stempffer, 1950); Kpain, I, II, IV, VII, XII; Bahn, VIII (Stempffer and Bennett, 1956); no further data, 1 ♂ (Good); 2 ♂, 1 ♀ (Naysmith); Cape Palmas, 2 ♂, IX (Good); Fisherman's Lake, 1 ♂, 1 ♀, V (Thomas); Robert's Field, 2 ♂, VI (Thomas); Harbel, 3 ♂, 5 ♀, I, 9 ♂, 9 ♀, II, 4 ♂, III, 5 ♂, 2 ♀, IV (Fox).

Euchrysops osiris Hopffer

Lycaena osiris Hopffer, 1855: 642. *Euchrysops osiris:* Bethune-Baker, 1923: 359; pl. 25, fig. 61, pl. 32, fig. 60. Hawker-Smith, 1929: 223. Stempffer, 1954c: 352. Condamin, 1956: 201.

The species is not previously recorded for Liberia. It occurs throughout Africa south of the Sahara, ranging north to Senegal, Upper Volta and Eritraea and also occurs on Madagascar. It is strangely uncommon, perhaps even absent, in some areas, Liberia among them.

Possibly it is primarily a savanna species (see the observations of Swanepoel, 1953: 112).

Liberia: no further data, 2 ♀ (Naysmith).

[**Euchrysops(?) jacksoni** Stempffer]

Euchrysops jacksoni Stempffer, 1952b: 117; fig. 1, pl. 1, figs. 11, 23. Condamin, 1956: 201.

This little species has aberrant genitalia for the genus, as Stempffer has noted. It was described from Uganda but Condamin more recently has recorded it from Senegal. It may possibly be found in Liberia though no specimens are known as yet.

[**Euchrysops reducta** Hulstaert]

Euchrysops kabrosae reducta Hulstaert, 1924: 134. Stempffer, 1954e: 46. *Euchrysops reducta:* Hawker-Smith, 1929: 232. Stempffer, 1961: 67; fig. 26.

No Liberian specimens are known of this species which ranges from Upper Volta to Abyssinia (subspecies *niveocincta* Ungemach).

Genus **EICOCHRYSOPS** Bethune-Baker

A small and wholly African genus of blues, most of which are quite small in size. They are unusually diversified in facies.

Eicochrysops hippocrates Fabricius

Hesperia hippocrates Fabricius, 1793 [1793-1794] 3: 288. *Cupido hippocrates:* Karsch, 1893: 227. *Eicochrysops hippocrates:* Stempffer, 1950: 404; 1952a: 188; 1954c: 352. Stempffer and Bennett, 1956: 513.

This species occurs over nearly all of Africa south of the Sahara, including Madagascar.

Liberia: Webo (Stempffer, 1950); Kpain, IX, X, XII (Stempffer and Bennett, 1956); no further data, 1 ♀ (Naysmith); Harbel, 2 ♂, I, 1 ♀, II, 6 ♂, XII; trail near Fisabu, 4 ♂, XII; Ganta, 2 ♂, VII; Zorzor, 2 ♂, XI (all Fox).

[**Eicochrysops dudgeoni** Riley]

Eicochrysops dudgeoni Riley, 1929: 497; pl. 30, figs. 2, 4. Stempffer, 1952c: 149; 1954c: 352.

This species has not yet been found in Liberia but occurs in the nearby Nimba Mountains in the Republic of Guinea. It was first described from specimens taken in Nigeria.

Genus **CUPIDOPSIS** Karsch

Three species are known to belong to this genus and all are discussed below although only one of them has so far been found in Liberia. Life history information on *cissus* is to be found in Jackson (1937).

Cupidopsis cissus Godart

Polyommatus cissus Godart, 1822: 683. *Neolycaena cissus:* Hawker-Smith, 1929: 233. *Cupidopsis cissus:* Stempffer, 1938: 205; fig. 27. Condamin, 1956: 201. Stempffer and Bennett, 1956: 513.

The species occurs over almost the whole of Africa from Senegal to Abyssinia and south, including Madagascar. There is a large female in Carnegie Museum taken at sea off Senegal, "100 mi S of Cape Verde."

There appears to be a certain amount of geographic variation in this species and Liberian material figures in this variation in a curious and suggestive way. Our material suggests the existence of the following forms.

(1) Eastern and southern Africa. Male with orange subterminal lunule of hindwing confined to Cu_1-Cu_2, with perhaps also a dot or small spot at tornus. Female with subterminal orange lunule in M_3-Cu_1, present but usually smaller than that in Cu_1-Cu_2; blue above relatively dark and with little distal white in it; a terminal white streak in Cu_2-2A of forewing above usually present and rather prominent. Underside of hindwing with ground grayish, the postmedian spots rather small, grayish. Specimens seen from Kenya, Ruanda-Urundi, Katanga, Nyasaland, Transvaal, Natal, Cape Province. A single male from Genderu, northern Cameroon (in the Adamawa Highlands) also agrees fully with this form.

(2) Western Africa. Male above with extensive subtornal orange, extending prominently into M_3-Cu_1 and often continuous with tornal spot. Female above with blue paler, extensively whitened distally on both wings, and with M_3-Cu_1 subterminal lunule nearly as large as

that in Cu_1-Cu_2; terminal white streak in Cu_2-2A nearly absent. Underside of hindwing with ground creamy, the postmedian spots strong and black. Specimens seen from southern Cameroon, Rio Muni, Gabon and from near Leopoldville on the lower Congo.

(3) Madagascar. Only a few specimens are available, all males. They suggest a form very similar to the eastern African, but with orange lunules above usually absent almost entirely.

(4) Liberia. Specimens from here, and presumably from elsewhere in Occidental Africa, show a curious mixture of traits of both eastern and western African forms. In the development of the subterminal orange lunules above they most resemble the eastern form; in the pale, extensively whitened blue above of the females they are most like the western; and below the hindwing ground color is grayish, as in the eastern form, but the postmedian spots are heavy and dark as in the western form.

Liberia: Yamein, 3 ♂, I (Stempffer and Bennett, 1956); no further data, 1 ♂, 1 ♀ (Naysmith); Harbel, 1 ♀, I, 1 ♂, II, 1 ♂, IV, 1 ♀, V, 1 ♂, X, 1 ♂, 1 ♀, XI; Kpain, 1 ♂, V (Fox).

[**Cupidopsis jobates** Hopffer]

Cupido jobates Hopffer, 1855: 642. *Cupidopsis iobates:* Stempffer, 1952a: 188; 1963b: 426.

There are no known Liberian specimens, but Stempffer's records from Togo and Dahomey (1952a) and from the Nimba Mountains of Guinea (1963b) suggest strongly that eventually it will be found there. The species ranges from Abyssinia south to the Cape and in the southern regions west to Angola and (Carnegie Museum) the vicinity of Leopoldville on the lower Congo River. Prior to Stempffer's paper (1952a) this species had never been recorded from Occidental Africa where it appears to occupy an area more or less isolated from the main eastern part of its distribution.

[**Cupidopsis mauretanica** Riley]

Cupidopsis mauretanica Riley, 1932a: 141; pl. 9, figs. 1, 2.

There are no known Liberian records of this species described from a region in the subdesert interior of Mauretania. It is also known from Senegal (Dakar). Stempffer (1957a: 209) states that the gen-

italia are identical to those of *jobates* and that it may therefore be a subdesert race of that species.

Genus **THERMONIPHAS** Karsch

Thirteen species, most of them West African, are known to belong to this recently revised genus (Stempffer, 1956b; Clench, 1961a). Only a single species occurs in Liberia.

Thermoniphas micylus mycylus Cramer

Papilio micylus Cramer, 1780 [1775-1791] 3: 160; pl. 282, figs. F, G. *Cupido micylus:* Karsch, 1893: 226. *Thermoniphas m. micylus:* Stempffer, 1950: 404; 1952c: 149; 1952a: 188; 1954c: 352; 1956b: 41; fig. 24. Stempffer and Bennett, 1956: 513. Clench, 1961a: 57; pl. 1, figs. 11, 14.

The nominate subspecies ranges from Sierra Leone about to Ghana. Farther east from southern Nigeria and Cameroon eastward to Kenya and north to Abyssinia occurs the subspecies *colorata* Ungemach. Though the latter subspecies appears to be quite rare where it occurs, nominate *micylus* is extremely common. The records below suggest a major flight period in October-December with perhaps a smaller flight in April.

Liberia: Pata, left bank of Cavalla River (Ivory Coast); Webo; Matouke; Glofakè; Taoke (Stempffer, 1950); Kpain, X, Bahn, VIII; Baila, VIII; Dingamo, VIII; Venntown, VIII (Stempffer and Bennett, 1956); no further data, 4 ♂ (Naysmith); Ganta, 1 ♀ (Leland); Harbel, 1 ♂, IX, 2 ♂, X, 7 ♂, 6 ♀, XI, 4 ♂, XII; Bomi Hills, 1 ♂, IV; Ganta, 1 ♂, I, 1 ♂, VIII, 1 ♂, 1 ♀, X, 2 ♂, XII; Yendamalahoun, 2 ♂, 1 ♀, IV; Zorzor, 11 ♂, 3 ♀, XI; trail near Fisabu, 1 ♂, 1 ♀, XII (all Fox).

Genus **OBORONIA** Karsch

A small, exclusively African genus occurring primarily in the rain forest. Predominantly white with fuscous borders and marks, the species are reminiscent of Pieridae and may, indeed, be mimetically associated with certain pierids as well as with the liptenid genus *Larinopoda.*

Oboronia punctata Dewitz

Plebeius punctatus Dewitz, 1879: 205; pl. 26, fig. 15. *Oboronia punctata:* Stempffer, 1950: 404; 1952: 149; 1952a: 189; 1954c: 353. Stempffer and Bennett, 1956: 513.
Oboronia elorea Fabricius: Karsch, 1893: 229.

This species apparently reaches the western limit of its range in Liberia and Guinea. It seems to be much commoner in the southeastern part of Liberia than in the northwestern half and it is not known from Sierra Leone. To the east its range extends to Uganda and south to Angola.

Liberia: Webo; Glofakè; Douékè; Barclayville; Mâtoubli [Mâloubli ?] (Stempffer, 1950); Yamein, 1 ♂, I (Stempffer and Bennett, 1956); no further data, 3 ♂, 1 ♀ (Naysmith); Ganta, 1 ♂, 1 ♀, X (Leland); Harbel, 1 ♀, XI; trail near Fisabu, 2 ♂, XII; Zorzor, 1 (sex ?) XI; Ganta 1 ♂ (?) VII; Wanau Forest, 1 ♀, III, 1 ♂, V (Fox).

Oboronia pseudopunctata Strand

Oboronia pseudopunctata Strand, 1912e: 137. Stempffer, 1950: 404; 1952c: 149; 1954c: 353.

The species occurs from Liberia and Guinea eastward through Nigeria to Congo and Gabon.

Liberia: Mâloubli; Ziabli (Stempffer, 1950).

Oboronia liberiana Stempffer

Oboronia liberiana Stempffer, 1950: 404, 405; figs. 1-3.

Described from three Liberian specimens by Stempffer in 1950, the species is also known from Ivory Coast (Ibadjan). It is closely similar to *O. punctata* but differs strongly in the dorsal structures of the male genitalia.

Liberia: Glofakè, 1 ♂, V (holotype); Diyalla, 1 ♂, V; 30 mi E of Monrovia, 200 ft., 1 ♂, II (Stempffer, 1950).

Oboronia gussfeldtii Dewitz

Plebeius gussfeldtii Dewitz, 1879: 206; pl. 26, fig. 12. *Oboronia gussfeldti:* Stempffer, 1954c: 352; 1957a: 206. Condamin, 1961b: 253.

The species ranges from Senegal and Sierra Leone eastward to the Congo and south to Angola.

Liberia: no further data (Stempffer, 1957a).

Genus **ATHYSANOTA** Karsch

Athysanota ornata ornata Mabille

Lycaena ornata Mabille, 1890a: 24; pl. 2, fig. 6. *Oboronia ornata:* Karsch, 1893: 229. *Athysanota ornata:* Stempffer, 1952a: 189; 1954c: 353. Stempffer and Bennett, 1956: 513.
=*Liptena pseudosoyauxi* Ehrmann, 1894: 77. Holland, 1927: 336.

The species ranges eastward from Sierra Leone and Guinea to Uganda and south to Gabon. Nominate *ornata* appears to be confined to Upper Guinea and is characterized by the feeble development of the terminal and subterminal fuscous markings below M_1 of the hindwing. *L. pseudosoyauxi* is an outright synonym of it and not, as Holland (1927) stated, a synonym of *vestalis* Aurivillius (1895: 219). The latter, usually considered a "form", is a valid subspecies to which belongs all our material from southern Cameroon, Gabon, eastern Congo (Kivu) and Uganda. In the latter subspecies the terminal and subterminal markings of the hindwing above are more developed. Nomenclatorially, the name Aurivillius proposed is both available and creditable to him, for he proposed it as a "var.", a term which he used noncommittally for both sympatric dimorphs (compare *Epitola dispar* var. *cordelia* Kirby on page 204 and *Hypolycaena lebona* var. *coerulea* on page 210 in the same work) and subspecies (compare *Liptena ilma* var. *simplex* on page 201). In the present instance, since he records one Cameroon specimen of "var. *vestalis*" and no typical specimens, we may assume that he meant the name to apply subspecifically.

Liberia: Bigtown (Naysmith ?) (Ehrmann, 1894: type in Carnegie Museum); Kpain, I, VIII, IX, XII; Kitoma, VIII; Jackson's Farm, VIII (Stempffer and Bennett, 1956); no further data, 1 ♂ (Good); Harbel, 3 ♂, I, 1 ♂, II, 2 ♂, 1 ♀, V, 1 ♂, IX, 1 ♂, X, 1 ♀, XI, 1 ♂, XII; Fish Lake, 1 ♀, XII; Bomi Hills, 1 ♂, IV; Kpain, 2 ♂, V; trail near Fisabu, 1 ♂, XII; Zorzor, 1 ♂, XI (Fox).

Tribe EVERINI

Genus **AZANUS** Moore

A small and, for the most part, homogeneous-appearing genus found primarily in savanna and subdesert areas. *A. mirza* and the

aberrant-looking *A. isis* (which, until recently, had been placed in *Castalius*) are, however, common and characteristic rain forest species. *A. ubaldus* (see below) and *A. jesous* Guerin, in addition to their wide range in Africa, also occur eastward into the Indo-Australian region at least as far as southern India. Jackson (1937) has described the life histories of two species.

Azanus isis Drury

Papilio isis Drury, 1773 [1770-1782] 2: 6; pl. 3, figs. 4, 5. *Cupido isis:* Karsch, 1893: 227. *Castalius isis:* Peters, 1952: 114. *Azanus isis:* Stempffer, 1942: 133; 1950: 404; 1952c: 149; 1952a: 189; 1954c: 353. Stempffer and Bennett, 1956: 513.

A. isis, one of the commonest butterflies of Upper Guinea, ranges from Sierra Leone and Guinea eastward to Abyssinia and Uganda, south to Angola and Katanga without showing any noticeable geographic variation at all.

Liberia: Tâokè; Kaouékè; Nianiou; Ziabli; Penokè; Webo; Glofakè (all Stempffer, 1950); Kpain, IV, VI, VIII, IX; Bahn, VIII; Baila, VIII; Venntown, VIII; Dingamo, VIII; Zuole, VIII; Karnwin, VIII (all Stempffer and Bennett, 1956); Fisherman's Lake, 2 ♂, 3 ♀, V; Robert's Field, 1 ♀, VI (both Thomas); Harbel, 2 ♂, 3 ♀, I, 1 ♂, II, 2 ♂, III, 6 ♂, 3 ♀, IV, 4 ♂, V, 2 ♀, VII, 1 ♀, IX, 1 ♂, X, 3 ♂, XI, 4 ♂, 5 ♀, XII; trail near Fisabu, 4 ♂, XII; Zorzor, 1 ♂, 2 ♀, XI, 2 ♂, XII; Ganta, 5 ♂, V, 2 ♂, 2 ♀, VI, 1 ♀, VII, 1 ♂, X; Wanau Forest, 2 ♂, III, 2 ♂, X; between Vonjima and Yendamalahoun, 2 ♂, IV; Yendamalahoun, 10 ♂, 1 ♀, IV (all Fox).

[Azanus natalensis Trimen]

Lycaena natalensis Trimen, 1887, *in* Trimen and Bowker, 1887-1889: 77. *Azanus natalensis:* Condamin, 1961b: 254.
Azanus sigillatus Butler: Stempffer, 1938: 209, fig. 30.

This species has been recorded only recently (Condamin, 1961) from Upper Guinea, in Niokolo-koba National Park, Senegal. Otherwise its range includes southern Sudan and Abyssinia, south to Natal. No specimens are known from Liberia.

Stempffer in 1938 followed Aurivillius in equating the names *sigillata* and *natalensis* but, as he later explained (1942: 133), *sigillata* is actually a synonym of *moriqua.*

[**Azanus moriqua** Wallengren]

Lycaena moriqua Wallengren, 1857: 39. *Azanus moriqua:* Stempffer, 1942: 133; 1952a: 189. Condamin, 1961b: 254.
=*Lampides sigillata* Butler, 1876: 483.

This species has been found in Togo and in Senegal and hence should be looked for in Liberia, though as yet no specimens have been found there. Beyond these localities it is known from Lake Tchad, southern Sudan, and from Abyssinia south to Natal, thence west to Angola, thus nearly encircling the rain forest region.

Azanus mirza Plötz

Lycaena mirza Plötz, 1880: 203. *Azanus mirza:* Hawker-Smith, 1929: 232. Stempffer, 1938: 209; fig. 31; 1942: 133; 1950: 404; 1952c: 149; 1952a: 189; 1954c: 353. Stempffer and Bennett, 1956: 513.

This common species occurs over most of Africa below the Sahara, south to Natal and the Transvaal, but it is commonest (in contrast to most of its congeners) in the rain forest regions.

Liberia: Nianiou; Bihai; Touzon (Stempffer, 1950); Kpain, IV, VII; Wanan [Wanau], IV; Venntown, VIII (Stempffer and Bennett, 1956); Fisherman's Lake, 1 ♂, 1 ♀, V (Thomas); Harbel, 1 ♀, III, 3 ♂, 1 ♀, IV; trail near Fisabu, 1 ♂, XII; Ganta, 1 ♂, V, 5 ♂, VI, 9 ♂, VII; St. Paul River at Zorzor Road, 2 ♂, IV; Yendamalahoun, 2 ♂, IV (Fox).

[**Azanus ubaldus** Stoll]

Papilio ubaldus Stoll, 1784 [1775-1791]: 209; pl. 390, figs. L, M. *Azanus ubaldus:* Hawker-Smith, 1929: 232. Stempffer, 1936a: 325; fig. 2; 1938: 206. Condamin, 1961b: 254.

This is one of the few species of Lycaenidae common to both the Indo-Australian and the African faunal regions. In Africa its range extends from Somaliland and southern Tunisia south to South Africa. In the north it extends west across to Senegal. No Liberian records are known as yet.

Tribe PLEBEJINI

Genus **FREYERIA** Courvoisier

Two species are referred to this genus. One of them (*minuscula*

Aurivillius) is confined to Madagascar, the other is widespread in Africa and occurs as well in southern Europe, southern India and throughout the East Indies as far as the Philippines and Australia.

[**Freyeria trochilus** Freyer]

Lycaena trochilus Freyer, 1845 [1833-1858] 5: 98; pl. 440, fig. 1. *Chilades trochilus:* Hawker-Smith, 1929: 233. *Freyeria trochylus:* Condamin, 1961b: 253.

Though no Liberian specimens are known as yet, this species is quite likely to turn up eventually in the interior savannas. The African distribution of this species as recorded, for example, by Aurivillius (1925 [1908-1925]: 489) falls considerably short of actuality. The species, in addition to its occurrence in eastern Africa from the Cape to Eritraea and Arabia (and on into Indo-Australia), is also present on Madagascar and occurs, according to Carnegie Museum material, in the vicinity of Leopoldville, lower Congo River, in Gabon (A pair, taken *in copula,* are labelled "Prairie on Lake Ezanga, June 8, 1888, A. C. Good." There are other Gabonese specimens as well.), southern Cameroon, northern Nigeria (Maiduguri). Hawker-Smith (1929) records it from Upper Volta and Condamin (1961) from Senegal, thus making it likely that *trochilus* is a savanna resident all the way across the interior of Upper Guinea.

Genus **CHILADES** Moore

This small genus of about eight species, most of which are Indo-Australian, has two species occurring in Africa, and only one of these approaches Liberia.

[**Chilades eleusis** Demaison, subspecies]

Lycaena eleusis Demaison, 1888: 66. *Chilades eleusis:* Stempffer, 1936a: 323; fig. 1. Seth-Smith, 1938: 154. Stempffer, 1942: 134.

This species occurs widely across the northern subdesert or savanna fringe of the Ethiopian region from Senegal to Abyssinia. It may possibly occur in the savanna environments in the Liberian interior though no specimens are known as yet.

Tribe Zizeerini

With the exception of the Palearctic-African *Actizera,* whose membership in this tribe is doubtful, all three African species are representatives of widespread paleotropical species or species groups. One of them (*Zizula hylax*) is also represented in the New World, by the vicariant (or replacement) species *Z. cyna* Edwards. See the most interesting and informative accounts in Chapman (1910) and Corbet (1948).

Stempffer has referred *Zizula* to the Brephidiinae, but on the basis of genital structures *Zizula* agrees with the other genera of the present tribe in several significant ways and differs markedly from the bizarre structures of *Brephidium.* I accordingly place it here, as did Chapman. The problem, however, clearly needs further study.

Genus **ZIZEERIA** Chapman

A single species of the genus is known from the Ethiopian region; others occur in Indo-Australia, including *karsandra* Moore, a vicariant of the African species.

Zizeeria knysna Trimen

Lycaena knysna Trimen, 1862a: 282. *Zizeeria knysna:* Corbet, 1948: 595; figs. 6-9. Stempffer, 1950: 404; 1954c: 354. Stempffer and Bennett, 1956: 513. Condamin, 1956: 202.

=*Cupido* (or *Lycaena, Zizera, Zizeeria*) *lysimon* Hübner [preoccupied name]: of authors, including: Karsch, 1893: 226. Chapman, 1910: 485; pl. 51, fig. 1, pl. 54, fig. 13, pl. 56, figs. 22, 23. Hawker-Smith, 1929: 233.

The species occurs throughout Africa south of the Sahara (including Madagascar and the Seychelles), ranging north to southern Arabia on the east and southern Spain in the west. From eastern Algeria across North Africa and into the Indo-Australian region is found *karsandra* Moore (see distribution maps in Corbet, 1948: 596, 597).

Liberia: Webo; Diyala (Stempffer, 1950); Kpain, VIII, IX; Baila, VIII (Stempffer and Bennett, 1956); Cape Palmas, 4 ♂, IX (Good); no further data 1 ♂ (Naysmith).

Genus **ZIZINA** Chapman

Three species are known, one African and two Indo-Australian, one of the latter a vicariant of the African species.

Zizina antanossa Mabille

Lycaena antanossa Mabille, 1877b: lxxii. *Zizina antanossa:* Chapman, 1910: 488, 492; pl. 58, fig. 32. Hawker-Smith, 1929: 233. Stempffer, 1952a: 189. *Zizina otis antanossa:* Corbet, 1948: 599; fig. 11.

The species (a new record for Liberia) ranges eastward to Abyssinia and south to Natal, including Madagascar. In the Indo-Australian region occurs the vicariant species *otis* Fabricius (*indica* Murray, as used by Chapman, 1910).

Liberia: Cape Palmas, 1 ♂, IX (Good); Bigtown, 1 ♀ (Naysmith).

Genus **ZIZULA** Chapman

This genus is represented by only two species, *hylax* in the Old World from Africa to Australia and many Pacific Islands, and *cyna* Edwards in the New World. The two are very close and obviously vicariants but differ consistently in pattern and genitalia.

Zizula hylax Fabricius

Hesperia hylax Fabricius, 1775: 526. *Zizula hylax:* Corbet, 1948: 593. Stempffer, 1952a: 189. Stempffer and Bennett, 1956: 513. Condamin, 1956: 202.
=*Lycaena gaika* Trimen, 1862b: 403. *Cupido gaika:* Karsch, 1893: 226. *Zizula gaika:* Chapman, 1910: 492; pl. 52, fig. 8, pl. 53, fig. 12, pl. 59, figs. 33, 35. Stempffer, 1963b: 427.

The species occurs over the whole of Africa south of the Sahara and extends far to the east in the Indo-Australian region, reaching Australia, the Philippines and many of the islands of the western Pacific.

Liberia: Kpain, 1 ♂, III (Stempffer and Bennett, 1956); Harbel, 1 ♂, I; Wanau Forest, 2 ♂, I, 1 ♂, II (Fox).

Genus **ACTIZERA** Chapman

This genus occurs in Africa and adjacent areas of the Palearctic. It is possible that it is incorrectly assigned to this tribe.

[**Actizera lucida** Trimen]

Lycaena lucida Trimen, 1883: 348. *Actizera lucida:* Chapman, 1910: 494; pl. 52, fig. 7, pl. 53, fig. 11, pl. 60, fig. 40. Stempffer, 1954d: 234. *Zizeeria lucida:* Carpenter, 1935: 403.

There are no known Liberian records, nor any from areas very

close to it, but the recorded distribution (South Africa, north in the east to Abyssinia; Madagascar; Katanga; former French Congo) is considerably extended by two specimens in Carnegie Museum: Tibati, Cameroon, 1 ♂, 20-I-1937; Cotonou, Dahomey, 1 ♀, 4-III-1918 (A. I. Good). It is quite possible, particularly in view of the latter record, that *lucida* will be found to occur locally in Liberia. *A. lucida* appears to be an uncommon species and, like most of the Zizeerini, is probably often overlooked because of its small size and retiring habits.

Family Riodinidae

Middle and hindlegs with or without spurs; tarsal claw with endodont small but usually present (always present in African members); male fore tarsus always (except the aberrant *Styx*, of the neotropics) strongly reduced, the segments more or less completely fused and lacking ventral spines.

The family is nearly world-wide in distribution, but very unevenly so. Southern Asia and the Indo-Australian region probably have the greatest systematic diversity, with all three subfamilies represented (Hamearinae, Euselasinae, Riodininae). The tropical mainland of the New World has by far the largest number of genera and species, but they belong mostly to a single hypertrophied tribe (Riodinini). In the Ethiopian region, only two genera occur, *Abisara* Felder and Felder on the mainland and also in southern Asia and Indo-Australia, and *Saribia* Butler, endemic on Madagascar. Both of these belong to the tribe Abisarini (subfamily Riodininae). The classification used here follows that of Clench (1955).

Genus **ABISARA** Felder and Felder

An interesting and much diversified genus, well developed in tropical Asia and in the equatorial regions of Africa. In Upper Guinea only two outliers are known, each conspecific with relatives farther east and south, but each representing an endemic subspecies.

Abisara caerulea liberiana new subspecies (Figs. 230, 231)

Abisara tantalus form *caerulea:* Condamin in Stempffer, 1963b: 427 (Nimba Mountains).

Differs from nominate *caerulea* (see below) on the hindwing under-

Fig. 230, *Abisara caerulea liberiana* new subspecies, Ganta, Liberia, male holotype, upperside (x 1.0). Fig. 231, same specimen, underside. Fig. 232, *Abisara gerontes gerontes* Fabricius, Liberia, male upperside (x 1.0). Fig. 233, same specimen, underside.

side, where the space between the postmedian and subterminal lines posterior to M_3 is nearly filled with the same pale, dull bluish that forms the lines. In addition each of the two ocelli on this surface is fully as large as the subapical ocellus of the forewing below, whereas in typical *caerulea* they are definitely smaller. In both these respects the series of four specimens at hand is quite uniform. Typical *caerulea* has not been seen, my concept of it being based on Riley's figures and description and on the redescription of Carpenter and Jackson (1950).

Holotype. — ♂, Ganta, Liberia; 23-VI-1958 (R. M. Fox); C. M. Acc. 18608.

Paratypes. — 3 ♂, same locality (some labelled "Ganta Mission") and collector, dated respectively 6, 8, 15-VII-1958. C. M. Ent. type series no. 502.

Remarks. — A female was also secured with the males (same locality, 4-VI-1958), but is in such poor condition that no useful description of it is possible. It was not made part of the type series for that reason.

Abisara caerulea was first described as a male form of *tantalus* Hewitson by Riley (1932b: 185; pl. 2, figs. 8, 8a), based on a single specimen from the Lower Congo Valley. Carpenter and Jackson (1950: 106) raised the name to species status, based on a series of five males and four females from Yopole, 3500 ft, Buta District (Oriental Province), Congo. According to article 10 (b) of the new *International Code of Zoological Nomenclature* (1961), the species must be credited to Carpenter and Jackson, 1950.

It should be added that, although clearly a good species, *caerulea* is nonetheless a close ally of *tantalus*, sharing with it the important diagnostic traits of glabrous eyes, short upper discocellular of the hindwing, a (probably androconial) long tuft or pencil of hairs in the hindwing cell above in males, and a considerable disjunction of the hindwing termen at M_3.

Abisara gerontes gerontes Fabricius (Figs. 232, 233)

Papilio gerontes Fabricius, 1781: 117 (Sierra Leone). *Abisara gerontes gerontes:* Riley, 1932b: 181.

Riley (1932b) doubted the occurrence of this species in Sierra Leone, cited by Fabricius, and knew it from no farther west than southern Nigeria. In view of the present Liberian specimens, its occurrence in Sierra Leone is quite credible. Three subspecies are known: nominate *gerontes* (Sierra Leone, Liberia); *gerontes gabunica* Riley (Gabon); and an undescribed subspecies from Cameroon.

Liberia: no further data, 1 ♂ (Good); Ganta, 3 ♂, V, 1 ♂, VII, 1 ♂, XII; Wanau Forest, 1 ♂, III; trail near Fisabu, 1 ♂, XII (Fox).

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